Volume 72 No 9
September 2004

Amateur Radio

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The magazine for AUSTRALIAN amateurs

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[Lloyd Butler VK5BR]

Two tone testing

[Jim Tregellas VK5JST]

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[Neville Chivers VK2YO]

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Our Cover this month

Mark Diggins VK3JMD with his 4 year old son, Nathan, who was attempting his first sniffer hunt under his Dad's guidance. The photo was taken at the SERG Convention at Mount Gambier on the June long weekend during the Australian Fox Hunting Championships.

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues
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The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
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Representing
The Australian Amateur Radio Service

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International Amateur Radio Union

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Editorial Comment

Colwyn Low VK5UE

Looking to the future

The RD has been and gone and from what I heard on Saturday evening the contest operating conditions were noisy in the eastern states and quieter in the west. I worked 20 stations around the country in the time I had available and enjoyed the time. Thank you all for the contacts.

The RD issue cover was well received, so I had a good month!

The National WIA is settling down and the Divisions are proceeding with the procedures to wind up and sort out the structure needed to maintain the facilities for Amateurs they used to run as Divisions.

We are now pushing on to JOTA and this issue has an emphasis on youth. Scouts, Guides and now military cadets are all interested in wireless communication as are many young computer enthusiasts. Some of these groups have amateurs as leaders and some need every assistance they can get. So please try and provide assistance if your are asked to help.

On Thursday 19th August I was able to attend the Adelaide Hills Amateur Radio Society meeting to present the Amateur Radio Magazine Technical Award to Lloyd Butler VK5BR for his articles on EH antennas published in AR in 2003. I have been made aware that AR Magazine awards for 2002, which should have been made in 2003, have not reached the awardees. Drew Diamond VK3XU, The Higginbotham Award for contributions to AR magazine and Dale Hughes VK2DSH, the Technical Award. The Publications committee is working on rectifying the situation and I hope to post the certificates and cheques in the next few weeks.

I have had some complaints about the lateness of notice in Amateur Radio Magazine for events. This arises from two things, date of receipt of the notice from the organisers by AR and receipt of the magazine by members and readers. Unfortunately AR is not received in some locations until about the 14th of the month of issue and the closing date for material for that issue is about 4 weeks before that. So please ensure your notice is available to AR to be published in the issue before the event takes place. For example: - All November events should have been advertised in this issue September, with a follow up in October. Advertising in October only would do, but events in early November would only have 2 weeks notice to some members and readers. Advertising only in November would mean some people would hear about your event when it was over.

Apology. I have done it again. When I went looking for the ALARA Contest rules on Saturday 28th August 2004 I could not find them. They were in the April AR and I did not go back far enough. I hope those who needed them were able to refer to the WIA web site or found them in April 2004 AR

73 Colwyn VK5UE

Silent Key

Harley Davison VK2AHD

Wagga and District Amateurs were very saddened to hear of the passing of Harley Davison VK2AHD. Harley passed away suddenly during the evening of Sunday 14th August. Vale Harley VK2AHD

Submitted by John Eyles VK2YW

Erratum

***A Direct-reading Inductance Meter for Radio Coils* by Drew Diamond VK3XU in Amateur Radio August**

The word "microhenries", used in several places, is incorrect. The correct spelling is microhenrys.

Michael Owen VK3KI

Clearing the air

The Editor has drawn my attention to a couple of letters that he has received that contain some seriously wrong statements of fact, and I am aware of some equally wrong statements that have been made, including on air.

My instinct has been to ignore them, mainly because some are so wrong that even repeating them seems unnecessary.

However, the Editor has suggested that I should "clear the air" and "set the record straight".

I am not going to take what one person has said, and pull it part. What I am going to do is to express, in my own words some of the thoughts that I am referring to as being wrong.

"The national WIA wants the assets of the Divisions, particularly the VK2 Dural site."

This has been repeated and repeated. It is just not the fact. My own view and the view of the other directors is that Dural could be developed as an Australian W1AW, under the control of New South Wales, or even only Sydney amateurs. I have even suggested that it be placed in a trust, with whatever restrictions are desired. Of course, the problem with that approach, if taken too far, is that no one gets any benefit from the asset!

It is my belief that the national WIA must survive as a separate service organisation, with a service to attract members and with an income to meet its expenses, and just cannot be structured to depend on surviving by spending capital.

One single, strong national WIA will not emerge from disputes about assets.

The national WIA is careful to respect the right of the members of each division to decide what to do with the assets of their division for the betterment of amateur radio.

"The new company has cast aside the Divisions, who founded the WIA as we know it."

It was the Divisions who, through their Federal Councillors, passed a special resolution (a resolution requiring at least 75% majority) that adopted a new constitution for the WIA.

It was the 7 Divisions, each with one vote, who voted the Federal Council out of existence, and who started the period of transition from a federal structure to a single national structure, and so that every member of every division could have an equal vote in one single body.

They did so because they believed that a single national body, with a single board, and a simple structure and with cost savings from avoiding duplicated services, could be more efficient and more effective. A single national body, speaking with one voice is in the best interests of amateur radio in Australia.

While the Divisions have continued to exist as a company structure they can never exist again as part of a federal hierarchy as they were, as that has gone forever. Accordingly, it has been for each division to decide what it should do or what would be in the best interests of amateur radio. Some have decided to continue as a state or local group, under a different name and some have decided to wind up. The different name is important, because no one is helped by any risk of confusion, where someone could think that by continuing to belong to what had been a division they were supporting the WIA. Where a division has continued, it has done so because its Council and its members have believed that it can meet a particular need, such as the provision of repeaters or a special role in WICEN, not as a substitute for the WIA.

I would have thought it obvious that it would not be consistent with the view of the majority or in the best interests of amateur radio in Australia for what had been a division to now seek to act as an alternative or substitute organisation to the WIA. No one has seriously suggested such a course.

"Nobody is remaining a member of the WIA and it is doomed."

After three months of operation as the national WIA, the number of new members is growing by around 25% when compared with membership growth last year. It is still too early to determine if the number of members renewing is different from last year, though no alarming trend has been detected. The different pattern is no doubt due to the delayed mailing of July and August renewals. It is expected that the September renewals will also be mailed later than usual, because as the situation of the divisions' change, what needs to be said to members being offered renewal needs to change.

"The national WIA is heading for inevitable bankruptcy, particularly as it is about to employ a new manager at $70,000 per year."

The fact is that the WIA's expenses can be closely controlled and national WIA treasurer David Pilley undertakes a detailed review at the end of each month and constantly monitors the financial situation of the WIA.

Renewals and new membership applications are reviewed weekly.

Oh, the new manager? Well, we haven't heard of that. Much as we would like it to be true, that is a figment of someone's imagination at this stage. We must grow, and then we will go down that path.

"There have been threats of legal action by the new company."

That is just untrue. To seek the resolution of disagreements by resort to the courts seems to me to be totally contrary to the spirit of amateur radio. Yes, I am aware of veiled threats to litigate, but they certainly have not been made on behalf of the national WIA.

"Despite not financing divisions, fees have increased."

Until 1 July this year, the fees for "WIA membership" comprised two components, one for "federal", to meet

continued on page 7

Two tone testing

Jim Tregellas VK5JST

In these amazing days where one can go out and buy a state-of-the-art transceiver for just a little less than the cost of a good second hand car, much is written about such features as price and the number of bells and whistles.

Unfortunately, almost nothing is written about transceiver testing, which is the only way for the amateur to gain a "feel" for the really important front panel features such as audio AGC, audio compression, RF power output, and metering BEFORE a signal is put to air.

For beginners this is particularly important, because a huge gap exists between the knowledge required to pass the amateur "ticket", and practical transceiver operation. If you are actually constructing equipment then this knowledge is mandatory.

As the major mode of operation on HF is SSB, two tone testing needs to be clearly understood. With a two tone tester, a dummy load and an oscilloscope, a transmitter can be really put through its paces.

Two tone testing consists of applying two clean non-harmonically related sine waves of approximately equal amplitude to the audio input of an SSB transmitter. The sine waves are typically around 600 - 700Hz and 1800 - 2000Hz i.e. about 300Hz from either end of the audio pass band. The result, in a properly adjusted transmitter, is an RF output that varies from zero to maximum at a rate determined by the difference in frequency between the two audio inputs. Consequently, overdrive (which causes splatter), non-linearity, instability and a host of other problems are easily visible on the CRO.

This thorough testing of the transmitting system becomes even more important when the transmitter is followed by a linear amplifier, if only to avoid rock throwing, obscene language and other similar behaviour by understandably irate neighbours.

Other test modes can be used for SSB but they are not very realistic. For example, a single audio tone can be applied to the microphone input of an SSB transceiver. The oscilloscope display that results is a carrier envelope which does not vary in amplitude. Overdrive and other problems are not easily detected unless a spectrum analyser is available (and only a very fortunate few have one of these). Furthermore, the average RMS output power is equal to the peak envelope power, which is definitely not the case for speech, where the relationship between these two is probably around a 1:5 or 1:6 ratio. At full rated output, power supplies and heat sinks in the typical transceiver generally cannot cope as they are not designed for this type of operation, and transceiver damage is a distinct possibility.

Photo 1 – The Single and Two Tone Generator.

In two tone testing, the average power output is one half of the peak envelope power, and this represents the most severe conditions ever likely to be encountered in amateur operation, which is the continuous sending of a stream of Morse code dots (50% duty cycle). And this is a pretty savage test. For phone operation, heat liberated from power supplies and RF power amplifiers is very much less than that caused by two tone testing. Further, the PEP measured during typical speech will usually be significantly larger than that measured under two tone testing conditions (probably 5 - 15% larger) simply because the power supply rails rise due to the light demands and poor supply regulation.

So, in summary, intelligent two tone testing of a transmitting system and application of its results will give the amateur all he needs to operate a transceiver correctly, and put a clean signal on air to the benefit of the entire amateur fraternity.

Single tone testing is also provided by the generator described later in this article, and should generally be reserved for AM, double sideband, and FM. The dummy load and oscilloscope can be used for the first two modulation modes with the same excellent results as for SSB. FM however, requires different test gear to analyse the transmitter output. None of these three modes will be discussed in this article.

How it works

Operation of the generator is quite simple. The two oscillators are based around a low pass phase shift network which provides a 180 deg. phase shift at the frequency of oscillation. The circuit is unique, and is the reverse (dual) of the high pass network normally used in phase shift oscillators. It has the major advantage that the gain around the oscillator loop does not have to be critically adjusted to obtain a sine wave. In fact, the whole circuit operation simply relies on the amplifier having a very high gain to produce a square wave at its output, which is then low pass filtered to generate a sine wave at the amplifier input. Both oscillators are run for two tone operation, while one or the other is stopped for single tone work.

The sine voltages existing at pins 6 and 9 of the op amp are current summed at pin 2, which is a virtual earth due to the negative feedback from pin 1 of the output amplifier.

In order to get a good sine wave, the

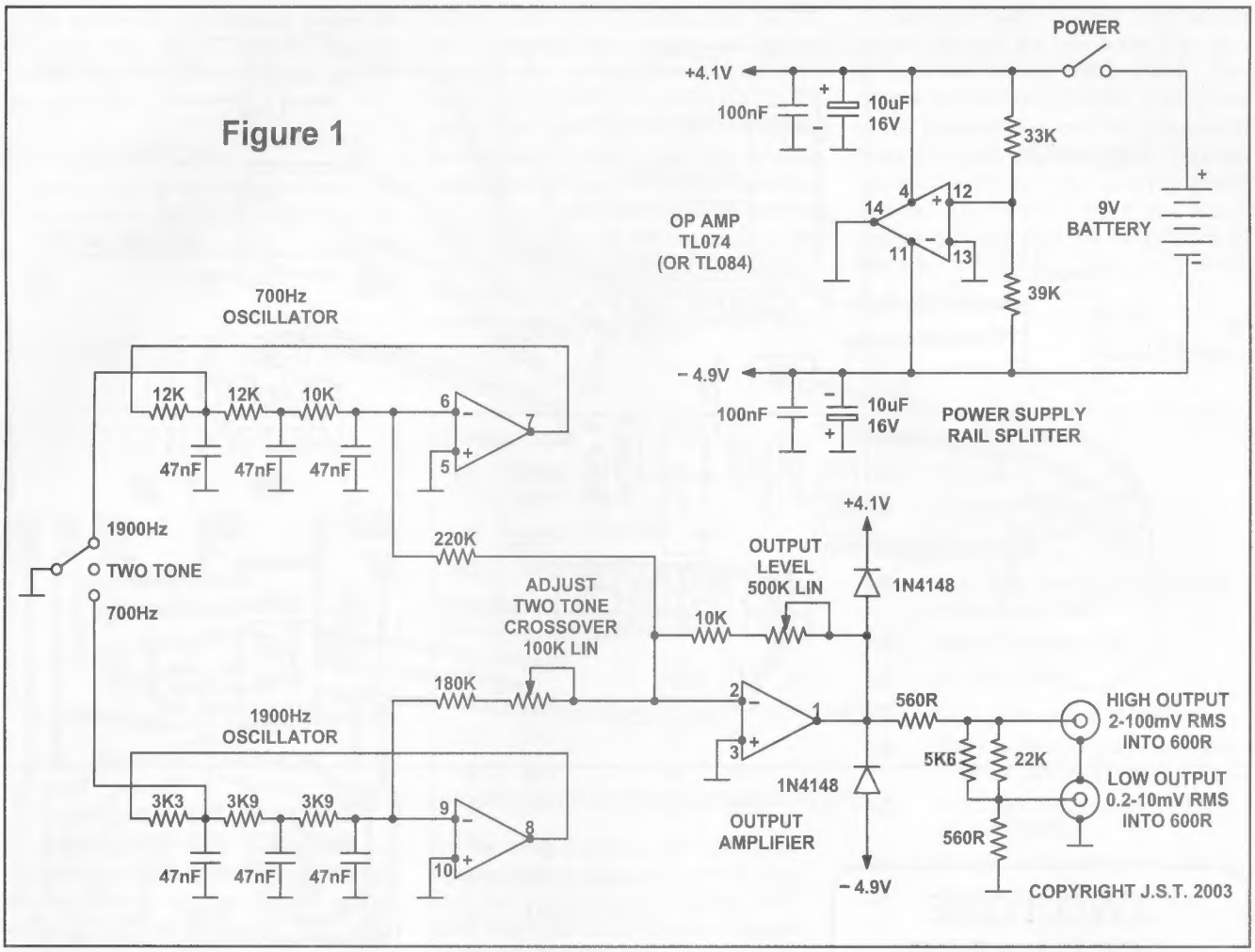

Fig 1 – Single and Two Tone Generator for transceiver testing.

positive and negative half cycles of the square waves existing at either pin 7 or 8 must be closely symmetrical (better than 2%), and to cause this to happen a slightly larger negative supply is generated by the power supply splitter circuit section. This compensates for the fact that the op amp output swings closer to the positive rail than to the negative rail, and places the op amp inputs exactly at the centre of the output swing.

Note that the current swing into pin 2 can be varied by the 100 k pot. This is an important feature sometimes omitted from two tone testers, and allows the amplitude of one audio sine wave to be adjusted relative to the other. This feature compensates for the fact that the transmitter audio response is usually not flat, and allows perfect zero crossings to be obtained in the RF output (see CRO photos).

The last stage is simply an inverting

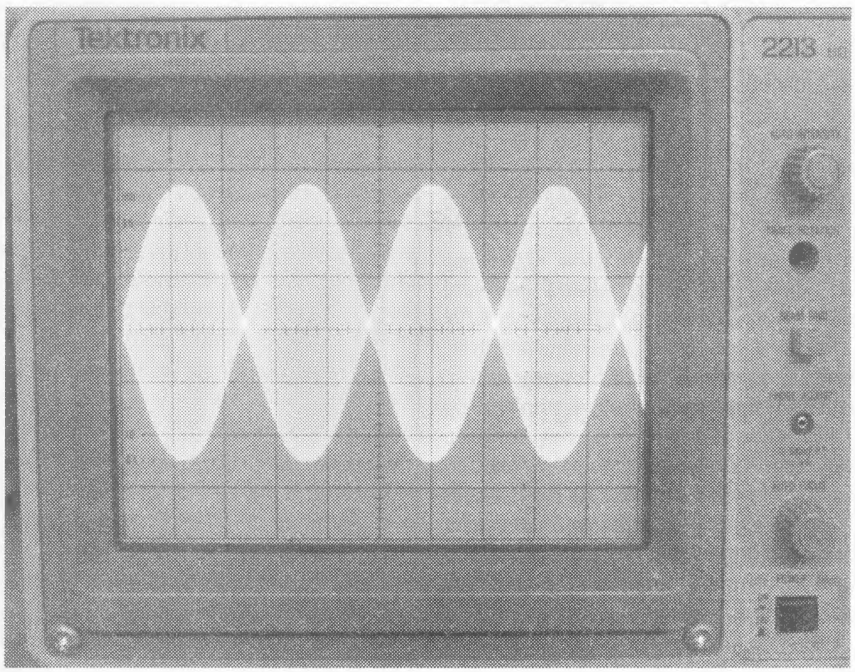

Photo 2 – A properly adjusted SSB transmitter with two tone audio levels correctly set.

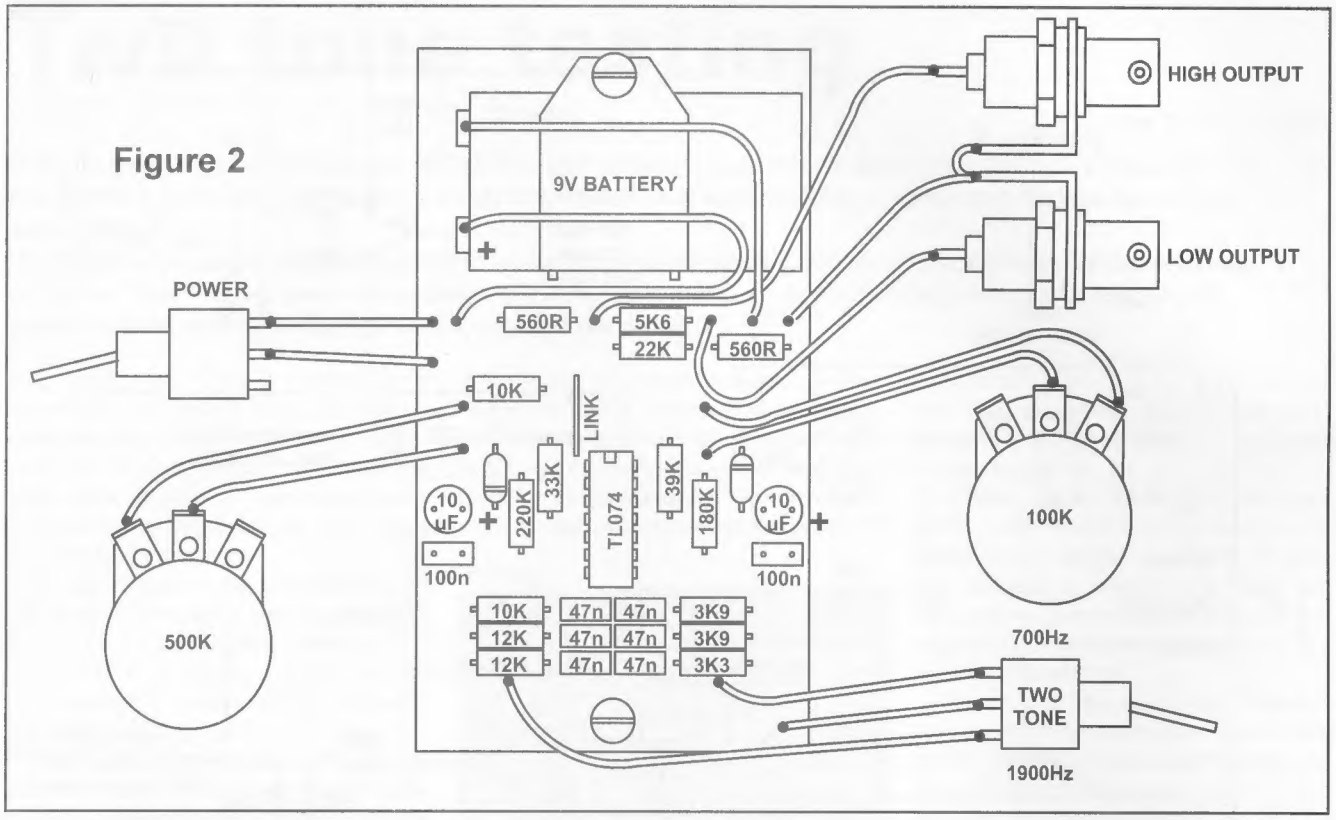

Fig 2 – Component overlay for the two tone generator.

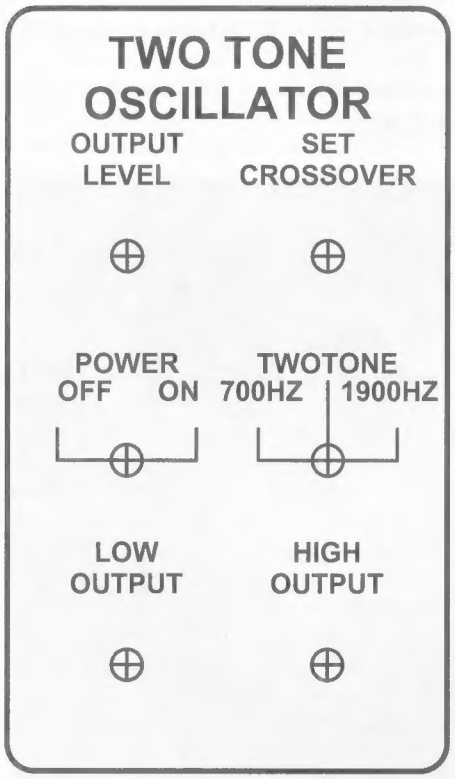

Fig 3 – Front panel label (actual size).

amplifier providing a gain which can be varied over a 50:1 range. The output impedance of this stage is approximately 600 ohm allowing transmitter low impedance microphone inputs to be driven. If the transmitter microphone input is high impedance (47K) then the generator output voltage will be approximately twice that shown on the circuit. Two diodes are included to protect the op amp output, so that it cannot be dragged

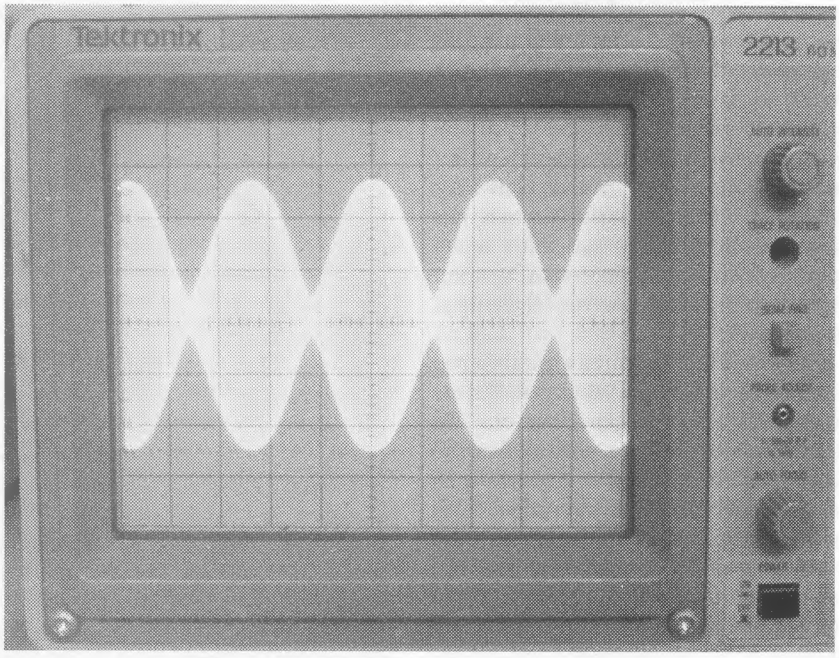

Photo 3 – The same SSB transmitter with two tone audio levels incorrectly set.

either above the positive or below the negative rails by an external voltage. Finally high and low voltage outputs are provided.

Construction

Construction is so simple almost no description is required. Make the PCB (if you feel so inclined) and follow the component overlay using the components specified. Make sure all wiring is kept well away from the pin 7/8 end of the IC so that no glitches appear in the output sine waves due to stray capacity coupling of the fast square wave transitions. USE A METAL BOX to avoid RF feedback during testing, and coaxial cable between the generator output and transmitter microphone input for the same reason. The battery is retained by a U loop of heavy copper wire which passes through the two holes provided in the PCB (do not solder these). The copper wire is then soldered to the piece of tin plate shown on the component overlay on top of the battery, through which the battery hold down screw passes. Before switching on, check battery polarity and the orientation of electros and the IC. There isn't much to go wrong.

ar

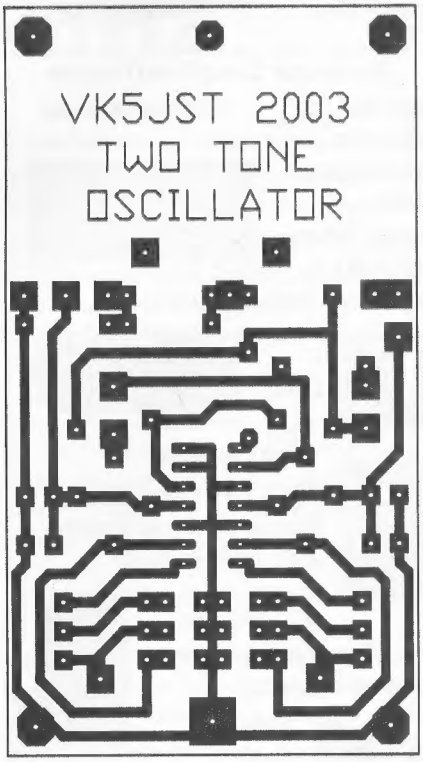

Fig 4 – The PCB artwork for the two tone generator (actual size).

Parts list

Capacitors

2@	10 µF 16V aluminium electrolytics
2@	0.1 µF 100V MKT caps.
6@	0.047 µF 100V greencaps

Resistors

All resistors are 0.25 Watt 5%

2@	560R	1@	22K
1@	3K3	1@	33K
2@	3K9	1@	39K
1@	5K6	1@	180K
2@	10K	1@	220K
2@	12K		

Potentiometers

1@	100K linear pot
1@	500K linear pot

Semiconductors

2@	1N4148
1@	TL074 or TL084

Miscellaneous

1@	box - DSE Catalogue No. H2305 or equivalent
2@	potentiometer knobs
1@	9V battery clip
2@	BNC panel mount connectors
1@	SPDT switch (on-none-on) DSE. P7654 or Jaycar ST0335
1@	SP3T switch (on-centre off-on) Jaycar ST0336
1@	14 pin DIL IC socket
2@	19 mm long standoff pillars tapped 3 mm both ends
	miscellaneous screws, hookup wire, cable clips, scrap tinplate

WIA Comment *continued*

the cost of AR, the cost associated with representation, the office and the like, and then, a different amount for each division, a "divisional" component, covering divisional activities, in some cases repeaters, licences, repeater site rental, and the like. So, where a division has elected to continue, such as Victoria as Amateur Radio Victoria, or in the ACT, as the Canberra Region Amateur Radio Club, they charge a fee, to meet the cost of the services they continue to provide, such as the repeaters.

For members in most states, the new national WIA fee is less than the composite fee charged until July this year. That does present a problem, as more and more the national WIA needs to ensure that local services are not lost.

"I don't like AR, it is a VK3 thing, and so the WIA doesn't do anything for me."

And that is the heart of it.

In the last week or so, I have visited clubs in Newcastle, Townsville, Rockhampton and the Gold Coast, and attended the last WIA Queensland Division Council meeting.

I have talked about the importance of Australia in last year's ITU conference in relation to the agenda item relating to the 7 MHz amateur band, and the importance of two amateurs as members of the Australian delegation representing the amateur service and how it was vital that there was a WIA to nominate those delegates.

I have talked about the national WIA addressing the problem of BPL, a very difficult and potentially dangerous issue.

Yes, national WIA membership does give the member AR, yes through our web site www.wia.org.au we continuously tell everyone what we are doing, (have a look at the site about BPL) yes, through WIANews we hope we are providing amateurs with much information of interest, but I suggest that to say the WIA does nothing is to ignore the fact of representation.

The local club may finance a repeater and I don't have to be a member of the club to use it.

The union complains that it gets benefits for all workers, including those who are not members.

The WIA may protect my bands but I don't have to be a member. But, I am a member. I guess I realise how important that representation is.

ar

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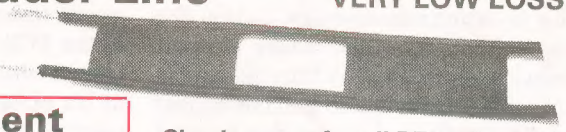

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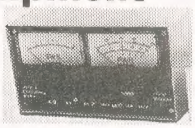

Autek RF1 HF Antenna Analyzer

Autek RF5 VHF/ UHF Antenna Analyzer

Autek VA1 MF/HF Vector Antenna Analyzer

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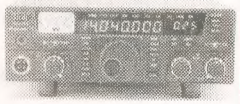

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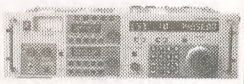

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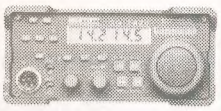
SGC 2020 Portable 20W HF Transceiver

SG 500 HF Mobile 500W Power



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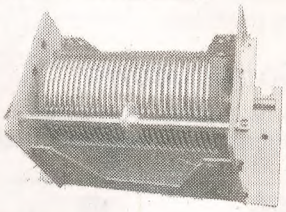

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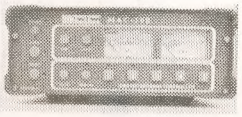

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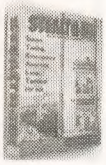

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Operating a 5 band HF amplifier on 10, 18 and 24 MHz

Neville Chivers VK2YO
57 Vulcan Street,
Kingscliff, NSW 2487

If you have an old five band, 80 through 10 m, HF amplifier such as the Yaesu FL2100B series and you would like to operate it on 12, 17 and 30 metre, as well as the original 80 to 10 m bands, without modification, then please read on. This may interest you.

Some years ago I acquired a Yaesu FL2100B amplifier, second hand. These amplifiers were compatible with the Yaesu FT101, FT200 vintage transceivers of the valve final type.

My current transceiver is all solid state with 50 ohm unbalanced output. No problem here as the FL2100B is 50 ohm unbalanced input so it was not hard to match them up once the switching arrangements had been figured out. However, only the five bands that the FL2100B was designed for were available.

A look at the circuit diagram of the FL2100B convinced me that major surgery was required to accommodate the extra three bands at 10, 18 and 24 MHz that became available after this type of amplifier was built.

Is there another way? Yes, there is! But it requires a tuner between the exciter and the amplifier. How does that help? Let me explain.

With the amplifier switched to 20 m and the output connected to a resonant 30 m antenna, I tried feeding the amplifier with a tuning signal direct from the transceiver. The result was very little output on 30 m from the amplifier and very little output from the transceiver to drive the FL200B. In fact, there was less than 20 W indicated. As the amplifier requires 100 W drive, this was not nearly enough.

The transceiver's final transistors are protected by internal circuitry against damage by mismatch at the output and will not produce full power of 100 W unless the SWR is below 1.5 to 1.

I next placed an SWR bridge between the transceiver and the amplifier still connected to the 30 m antenna. I tuned again and observed that the SWR was off the scale! Obviously a severe mismatch and nowhere near the 50 ohm impedance that the TS680S transceiver likes to work into.

I have a Kenwood AT-130 antenna tuner and, when it was placed between the transceiver and the amplifier, interconnected with 50 ohm coax, the tune up procedure was reactivated. A few trial settings of the Receive Tune and Transmit Tune knobs produced an SWR of 1 to 1 and full 100 W drive indicated into the amplifier. Then, with adjustment of the amplifier plate and loading controls, hey presto!, full output from the FL2100B into the resonant 30 m antenna was indicated.

The same procedure was then tried on the 17 and 12 m bands with the amplifier switched to 15 m for 17 m operation, and to 10 m for 12 m operation, with equally pleasing results.

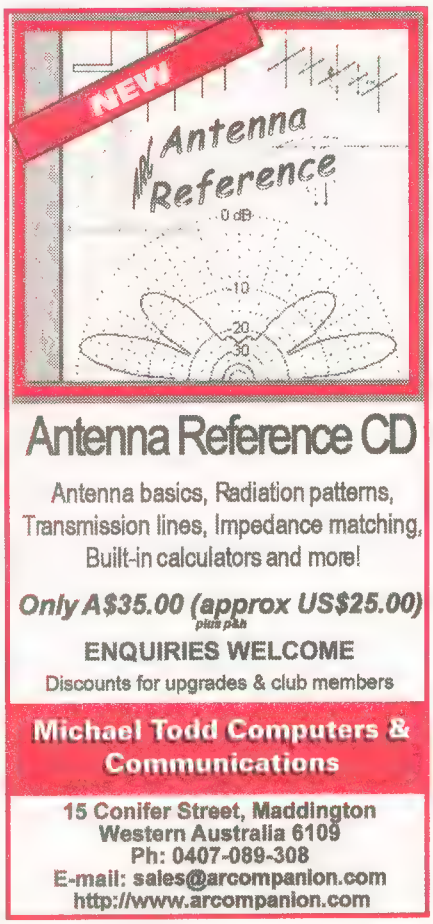
I only tried this with the units I have available, but I can see no reason why it would not work with some other combinations. I suspect it would be easier with a transceiver that incorporates an automatic antenna tuner.

Just for reference, for anybody with an AT-130 ATU available, these are the settings that worked for me:

TS680S transceiver	AT-130 tuner	FL2100B amplifier
30 m band	10 - Rx-tune 0 Tx-tune 5	20 m band-switch
17 m band	18 - Rx-tune 0 Tx-tune 9	15 m band-switch
12 m band	24.5 - Rx-tune 9 Tx-tune 10	10 m band-switch

Ensure that the amplifier is connected to a resonant antenna for each of the 10, 18 and 24 m bands, then adjust the plate and loading controls for maximum output, not exceeding the published IC for the tube finals.

Give it a try. It works for me. And when you wish to use the amplifier on any of its original bands there is no need to remove the tuner - just turn its band switch to the through position.



Understanding phase-locked loops

Elmo Jansz VK7CJ

Early beginnings

Phase-locked loops (PLL) came into existence in the early 1930s to overcome some of the problems associated with superheterodyne receivers, particularly the large number of tuned circuits present in conventional receivers. A new concept of receiver was conceived, called a Homodyne and later, a Synchrodyne.

The input signal and a local oscillator were mixed (actually multiplied together) and after filtering, an exact replica of the original audio could be recovered - assuming that the phase and frequency of the two signals were identical. Unfortunately the oscillator tended to drift with time and reception became impaired. The problem was overcome by comparing the local oscillator frequency with that of the incoming frequency in a phase detector to produce a 'correction' voltage sometimes called an 'error voltage' which could be applied to the oscillator to pull it back on track. This was the early beginning of the phase-locked loop.

Phase-locked loops are now used in FM and AM demodulators, in Frequency Synthesizers, in Low Noise Satellite Receivers, in Industrial Motor Speed Controllers, in Frequency Shift Keying Decoders and in TV Receivers to lock the horizontal and vertical oscillators to the Sync. Pulses, to name but a few applications.

General principles

A phase-locked loop (from now on we shall call it the PLL) consists of the following blocks as shown in Fig 1 below.

1. A phase detector
2. A low-pass filter
3. A voltage controlled oscillator

Observe that the PLL has a forward and a feed-back path. The VCO is a free running oscillator, the frequency of which can be set by an external RC or LC combination. The output frequency of the VCO is fed back to the input of the phase detector where it is compared with that of the input signal. The output of the phase detector, that is, the 'error voltage', is the average DC voltage that is proportional to the phase and frequency difference between the VCO and input signals. This voltage is filtered by the low pass filter to remove any high frequency components present such as noise and is applied to the VCO to complete the loop. The 'error voltage' forces the frequency of the VCO to change in a direction that reduces the frequency difference between that of the VCO and the input signal. When the VCO starts to change frequency it is said to be in the Capture State. This process continues until the input and VCO frequencies are identical, when the loop is said to be phase-locked. During phase-lock the VCO frequency is identical to that of the input except for a finite phase difference. This phase difference is necessary to generate a small voltage to keep the loop operating. After this state is reached the loop follows changes in the input frequency. That is, if the input frequency changes the loop follows these changes. We now have a system that can follow changes in a given frequency precisely.

A PLL has three distinct states as defined below.

1. Free running
2. Capture
3. Phase-lock

When no input signal is applied to the PLL, or when the input and VCO are far apart, the VCO maintains a constant frequency which is called the free running frequency. This frequency is set by the external RC or LC components mentioned above.

When the input and VCO frequencies are close enough the loop can acquire phase-lock. The PLL is now in its capture state or capture range. That is, the capture range is the range of frequencies over which the loop will acquire phase-lock. The range of frequencies over which the loop will follow changes in the Input after lock is called the lock range. The capture range is always smaller than the lock range. We need to distinguish between the two clearly.

Capture Range - The range of frequencies over which the loop will acquire lock.

Lock Range - The range of frequencies over which the loop will remain locked once captured.

Let us now examine the blocks making up the PLL.

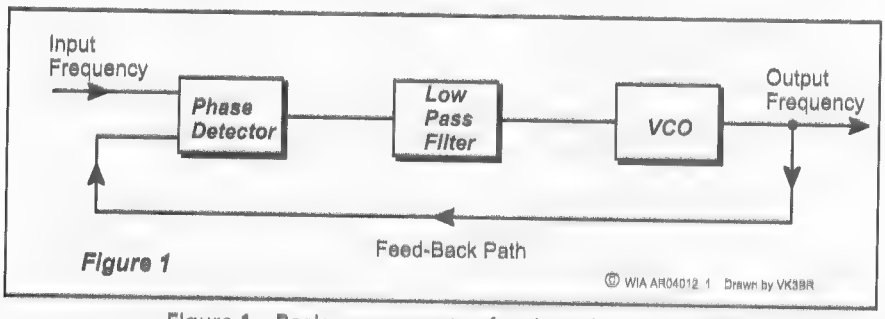


Figure 1 – Basic components of a phase-locked loop

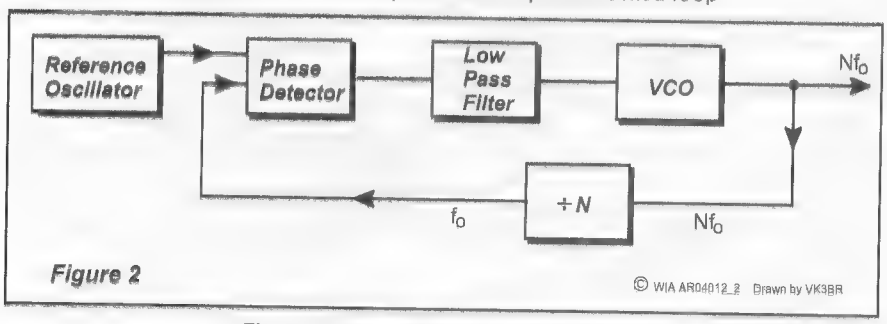


Figure 2 – Basic frequency synthesizer

1. Phase detector.

The phase detector is sometimes called the phase comparator. It gives an average DC voltage proportional to the phase difference between the input signal and the VCO output. Phase difference is measured in degrees but in PLLs it is more commonly measured in radians. Pi radians is equal to 180 degrees, which makes one radian equal to about 57.3 degrees. There are analog and digital PLLs. Analog PLLs use a Balanced Mixer as the phase detector while digital PLLs use an Exclusive OR or an Edge Triggered circuit. Most modem PLLs use digital phase detectors.

2. Voltage controlled oscillator

The voltage controlled oscillator or VCO is a circuit which gives an output frequency proportional to the voltage applied to the input. There are a large number of VCOs in Integrated Circuit packages, eg the MC4024 which is a 14 pin device made by Motorola Semiconductors. It consists of two square wave generators with output buffers. The output frequency can be controlled by an external capacitor. It has a maximum frequency of about 25 MHz. Another device is the MC 1648. This requires an external LC combination and can operate up to frequencies of about 225 MHz.

3. Low pass filter

The low pass filter has two functions; first to remove high frequency noise components as already mentioned above and secondly as a control for the dynamic performance of the loop. In other words the speed with which the loop responds to external changes. The filter could be active or passive. That is consisting of passive components such as resistors, capacitors, etc or built around an operational amplifier.

Practical applications

At this point we shall consider a few common applications of PLLs

1. Frequency Synthesizer

Refer to Fig 2. The frequency synthesizer is essentially a PLL with the output going to a load and also to a binary counter, which divides the output frequency by an integer N. The number N is programmed into the counter. Observe that the other input to the phase detector is from a stable reference oscillator (fo). The loop is locked when the two inputs are identical. At this point the DC error voltage from the phase detector will be the exact value required to tune the VCO to a frequency Nfo which, when passed through the counter, will be reduced to fo which will be identical to the reference frequency. The output frequency can now be adjusted by changing the value of N.

2. FM demodulator

Refer to Fig 3. The input FM signal is compared with the VCO signal in a phase detector. The phase detector 'error voltage' is proportional to the frequency and phase difference of the two signals. The signal is passed through a low pass filter to remove any high frequency noise, then amplified and applied to the VCO. The loop is designed so that this voltage moves the VCO frequency closer to that of the incoming signal. If the incoming frequency is close enough to that of the VCO, ie it is in the capture range of the VCO, the VCO will change frequency and become equal to that of the incoming frequency. The loop is now in lock and the incoming signal and the VCO are identical in frequency but maintain a small phase difference. This is required to generate a small voltage to keep the VCO at its new frequency. When the input signal frequency changes due to the modulation on the original carrier, the VCO follows it and the two frequencies are equal. The control voltage required to follow the changes in the instantaneous frequency of the FM signal will now be proportional to that of the original information signal, that is, the modulating signal. We have assumed that the VCO operation is linear, which to all intents and purposes it is.

3. AM demodulator

Refer to Fig 4. The basic idea is similar to that for the FM demodulator. The input AM signal is applied to the PLL and the multiplier. The PLL produces a frequency identical to the unmodulated carrier. This is multiplied with the frequency of the VCO which is the same as the original AM when the loop is locked. The output of the multiplier contains the information signal as well as a number of sum and difference frequencies of the carrier and the information signal. The low pass filter isolates the information signal. The entire system is available in an integrated circuit package.

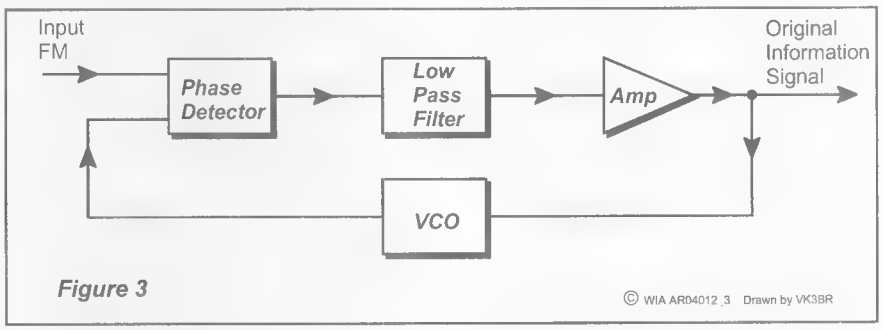


Figure 3 – Phase-lock FM demodulator

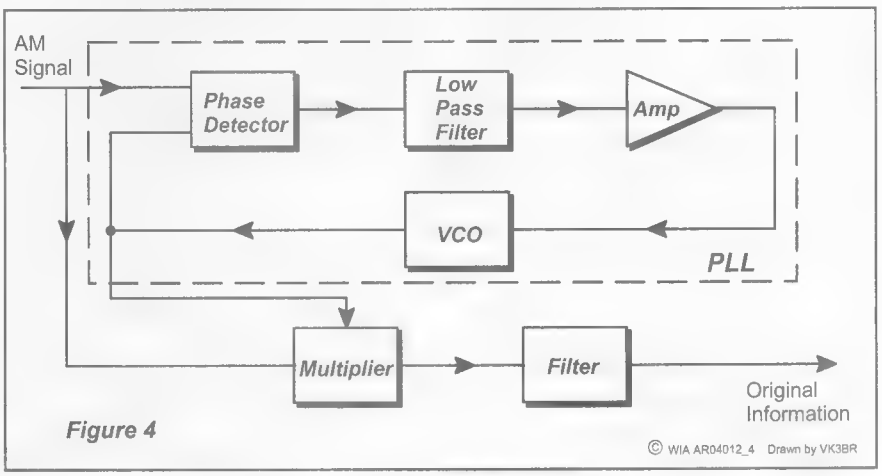


Figure 4 – Phase-lock AM demodulator

VK3AIR–417SQN

Australian Air Force Cadets

Theo Kalkandis VK3AP
417SQN AAFC

After a very successful Radio Communications field exercise over the Queen's Birthday long weekend, members of 417SQN Australian Air Force Cadets have now formed their own squadron radio club with the callsign VK3AIR.

Sixteen cadets took part in the Radio Telephony exercise comprising basic antenna theory, propagation, and radio operational procedures.

The equipment comprised sophisticated military HF backpack systems, amateur HF gear, various tuners and wire antennas of all descriptions and a number of UHF CB handhelds for onsite operational duties and procedural training.

The first exercise of the weekend was to erect an antenna system capable of covering our deployment area. A Bushcomm all band dipole was chosen for its simplicity and ease of tuning over the range of frequencies assigned over the weekend.

A suitable pair of trees was located in close proximity to the command post. The cadets formed their own little competition to see who could throw the pulley to the highest branch. After many attempts, the weight finally scored a nice branch at approximately 20 metre high. One leg of the stainless steel dipole was drawn up and tied off. The other side was much easier as many had now been gifted with the art of throwing that difficult piece of lead.

After further radio instruction the cadets were tasked with navigating to a predetermined area, setting up radio equipment including antenna, making contact with the command post, dismantling, changing location, and repeating the procedure to keep their operational skills at a high standard.

Radio here is a Racal BCC39B HF Manpack. It has a 2.3 metre copper whip antenna mounted into an integrated automatic ATU

The next task guided 2 teams (sections) some distance from the command post. A Scenario was given, resulting in both teams having to find an imaginary downed pilot some distance away, over some very difficult terrain. The cadets navigated by map and compass having to give location reports via HF radio every 30 minutes. The command post operator, also a first time radio operator, had the difficult job of recording all the details and relaying any relevant information to their respective officers.

Most of the cadets had such a great time operating radio equipment they now feel at ease with a microphone in their hand. This is the major obstacle in most youth operations including JOTA, so great emphasis is put on building and instilling confidence in our younger generations to continue with such a fantastic hobby and maybe even make a career of it. Our squadron now has 6 cadets wanting to join a signals unit as first preference, where prior to the

weekend they wouldn't even think of holding a microphone. The majority are also enquiring and very eagerly awaiting inception of the foundation licence in 2005.

Next year will see us starting another Ratel course with the possibility of encompassing other squadrons. I believe the Australian Air Force Cadets provide a fantastic environment for encouraging future amateur radio operators.

If you hear our club call VK3AIR please break in for a chat, we may even contemplate a club QSL card.

ar

Cadets under instruction in the Command Post.

Below: Two cadets satisfied with the communications link back to base. Note the coil of wire on the operator's belt. This was a reserve long wire with attachments for the Racal TRA906 HF Manpack in use. The 906 has a manual ATU.

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Technical Abstracts

Peter Gibson VK3AZL

Own your own Enigma machine – almost

There can't be too many people who haven't read about or seen documentaries about the Enigma cipher machines used by the German military during World War 2 and the success of the allied cracking of the codes generated by the machine.

In RadCom for June, 2004, John Alexander, G7GCK gives a brief history of the machine and describes his experiences in purchasing and building a modern electronic version of the Enigma machine.

The German Enigma machine is perhaps the best known of many mechanical cipher systems developed during the 20th century. It was originally developed in 1923 and was intended as a cipher machine for commercial use by banks, insurance companies, or any other organisation that needed security in business communications. Many countries purchased commercial versions of the machines, including the UK and the USA. From 1935, the British used a very similar type of machine, called the Typex. It was so similar, that supposedly one German operator converted an incomplete captured Typex as a spare for his Enigma machine.

Original Enigma machines, in good condition, are expensive to buy, so an electronic version is a reasonable alternative, – illustrating the original working system, and is more interesting (tactile) than a computer simulation.

John purchased a kit from Bletchley Park and constructed it in a relatively short time. It worked first time when switched on.

The Electronic Enigma emulates the German M4 (four rotor) Naval Enigma as well as the three-rotor version used by the Luftwaffe and Army. All settings can be made as for the real Enigma machine. Rotors, rotor order and other settings can be selected by pressing 'up and 'down' buttons on the board. You can even store several settings in memory to allow ultra fast switching between settings. There is also a fully functional plug board. This option was unique to the military machines.

There are some important additions to the electronic version that never appeared in the mechanical version, for obvious reasons. The kit can be connected to a PC via a standard serial port or can be configured to send Morse automatically. You can also encipher plain text, send it to a text editor and insert it into e-mails. An interesting variation on adding a degree of security to your e-mails.

Anyone who has seen a real Enigma would know that they came in a wooden box. Similarly, a nice wooden box would set this unit off, and John discusses some options.

The Enigma-E kit is available from the Bletchley Park shop or their website and costs 119.99 pounds.

The relevant web sites are:-
www.bletchleypark.org.uk
www.xat.nl/enigma-e
http://frode.home.cern.ch/frode/crypto/CSG

Simple sound-card-to-radio interface circuits

Have you ever wanted to try those digital modes that require connecting your computer sound card to your transceiver, but you have been put off by the cost of commercial interfaces.

In RadCom for April, 2004, Peter Homer, G4KQU describes three solutions – a fully isolated interface, a simpler interface without isolation and an even simpler one for hand-held radios. You can use them for RTTY, PSK31, SSTV, CW etc.

For digital transmission modes, you need to be able to connect your computer to your transceiver in an effective and consistent way, allowing signal levels to be correctly set and maintained.

General requirements

Three interface circuits of varying complexity are described below. They will also work well if you intend to run an Internet gateway using eQSO or EchoLink software.

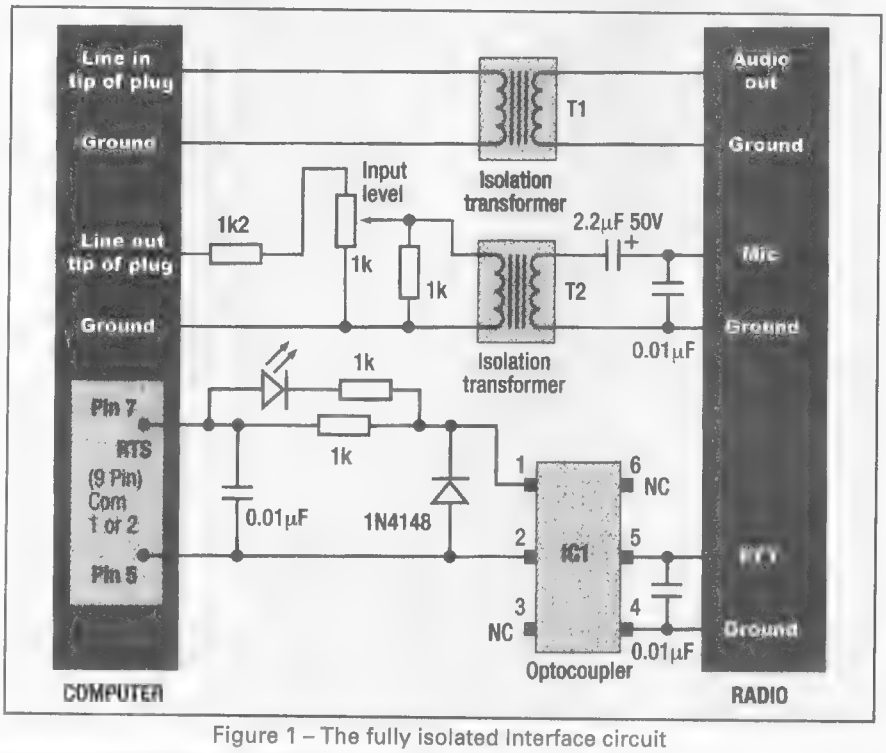

Figure 1 – The fully isolated Interface circuit

Some PTT techniques make use of the transceivers VOX circuits – but don't forget to disconnect it, otherwise you may get some surprises with the odd computer beep, or worse. The circuits described avoid using VOX switching, but as many new PCs have no RS-232 port, we may have to find new ways to switch our radios in the future.

Digital modes can have quite high duty cycles, much higher than speech. Try to keep your output power to 10-20 % of the maximum rated power. Also disable all of the compressors, DSP noise reduction etc.

The fully isolated interface

Figure 1 incorporates two 600 ohm transformers (T1, T2) and an RS-232 driven optocoupler, IC1 (4N25 or similar). Preferably use a socket for IC1, just in case.

As the reason for the transformers and coupler is to isolate the radio and computer, ensure the screening from each end is also kept separate. Stereo 3.5 mm plugs are commonly used. Use only tip and sleeve (no ring) in this case as we are not using stereo.

To control the radio PTT, an isolated RS-232 RTS line is used. If you use a DE9 connector, RTS is on pin 7 and earth is on pin 5. If you use a DB25 connector, RTS is on pin 4 and earth is on pin 7. Remember to configure your computer to use the RTS line for PTT.

To control the audio going to the microphone input on the transmitter, a 1 kohm potentiometer varies the input to T2, converting the line signals (0.5 V) to microphone (10 mV) levels. The 1.2 kohm resistor can be varied to put the pot in a 'comfortable' position in its travel.

Once set, the operation levels can be trimmed by adjusting the computer level controls. The high sensitivity LED is used as an indicator when the interface is in the transmit mode. The finished interface should be put in a shielded enclosure with the ground taken from the radio side.

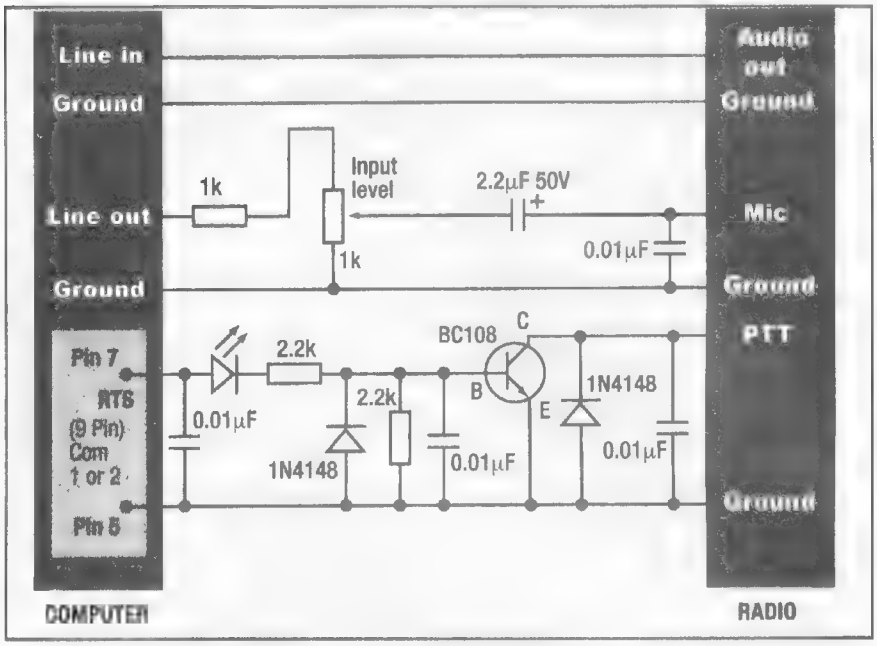

Figure 2 – Interface with same electrical performance as Fig1, but without isolation elements

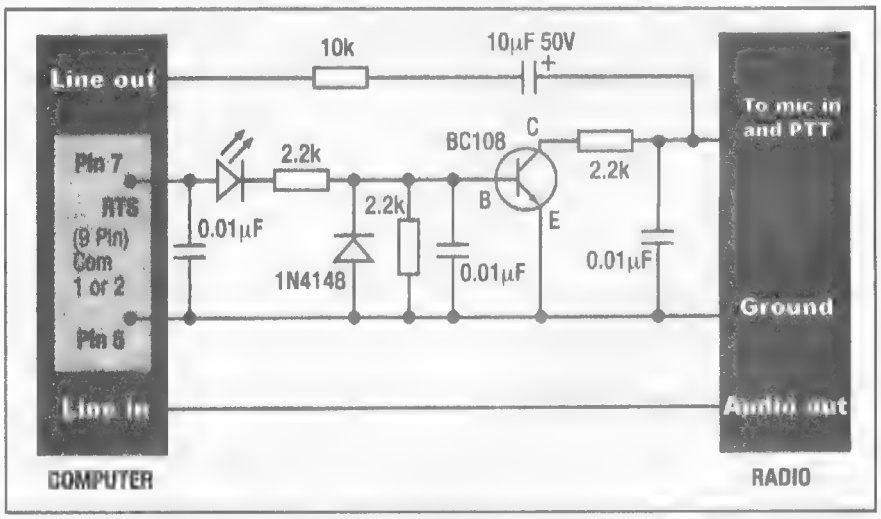

Figure 3 – Interface for handheld radios where PTT and microphone lines are combined

The simple interface

The circuit shown in Figure 2 is similar to Figure 1 except it does not use the transformers or optocoupler, but performs well. In this circuit, the RTS signal drives an open collector transistor for PTT. The transistor type is not critical.

The simple interface for handheld radios

The microphone and PTT lines in a handheld are normally combined, hence the circuit in Figure 3 was designed.

Audio levels can only be adjusted by the computers level control. Stereo 3.5mm plugs connect the 'line in' and 'line out' sockets on the computer sound card. As before, use the tip and sleeve only, the ring is not used.

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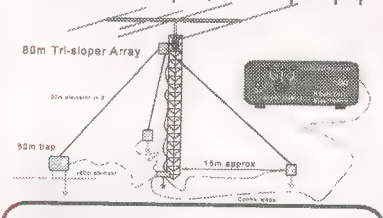

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An EH antenna for 10 metre

This is a companion to the 20 and 40 metre L+L EH Antennas published in the April 2003 issue of Amateur Radio

Lloyd Butler VK5BR

Here is a 10 metre version of the EH antennas published the April 2003 issue of Amateur Radio and which was assembled at around the same time. However it was put aside because of the problem encountered with interaction between the antenna tuning and the coaxial feeder. At that time I had not learned how to prevent this with a coax trap. The antenna has now been fitted with a tuned trap at its base and this has stabilised the tuning to the extent that any interaction is now negligible.

Circuit diagram

The antenna has the same basic circuit arrangement as the 20 and 40 metre versions previously published and which use the L+L balanced type of matching network. However also added is the tuned trap to eliminate interaction between antenna tuning and the coax feeder. For detail of operation of the matching network and why the trap is fitted, refer to my previous articles listed under the "Reference" heading. Circuit detail for the 10 metre antenna is shown in figure 1.

Assembly detail

The assembly is shown in figure 2. As before the host material to support the dipole cylinders and the matching network is PVC plumbing tube. Again the dipole cylinders fit on the inside of the tubing and are made of aluminium tubing which I recovered from the broken tiller of one of the boats we used to sail. More of the tubing is used for the capacitor stators fitted inside the PVC tube.

The slider sections of the capacitors were also made from thin aluminium tubing with a portion of the side cut out. I recovered this from an old IF can previously used in a valve superhet receiver.

Fortunately I had left plenty of PVC tube spare at the bottom of the antenna, below the input connector and in this space I wound 8 turns of RG58 coax around the PVC tube to form the coaxial inductor for the trap. This measured about 1.7 µH and was resonated around 29 MHz with a 10 pF capacitor. I find the easiest way to check its resonant frequency is to poke the dip meter coil up the centre of the PVC pipe. (This must be done with input and output leads disconnected so that the trap is not too loaded for the dip to appear).

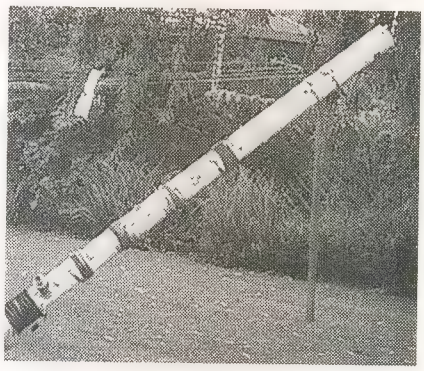

Photo 1 – The 10 m EH antenna.

I measured the through signal loss of the trap into 50 ohm resistance. Loss was so low that I deemed it negligible.

Without the trap, the antenna was a crazy thing to adjust. With the trap fitted, tuning was as stable as a rock.

Previous tests that I had carried out on a 20 metre L+L antenna indicated that the signal tended to be skewed upwards if the trap was fitted close to the input connector rather than a short distance down the coax cable. I wondered how this 10 metre antenna would perform with the trap so close. I carried out some very rough tests in the backyard and indications were that the signal was spread at right angles and upwards at around the same field strength. So there seemed to be some evidence of this skewing and that the antenna might perform about the same for high angle and low angle transmission.

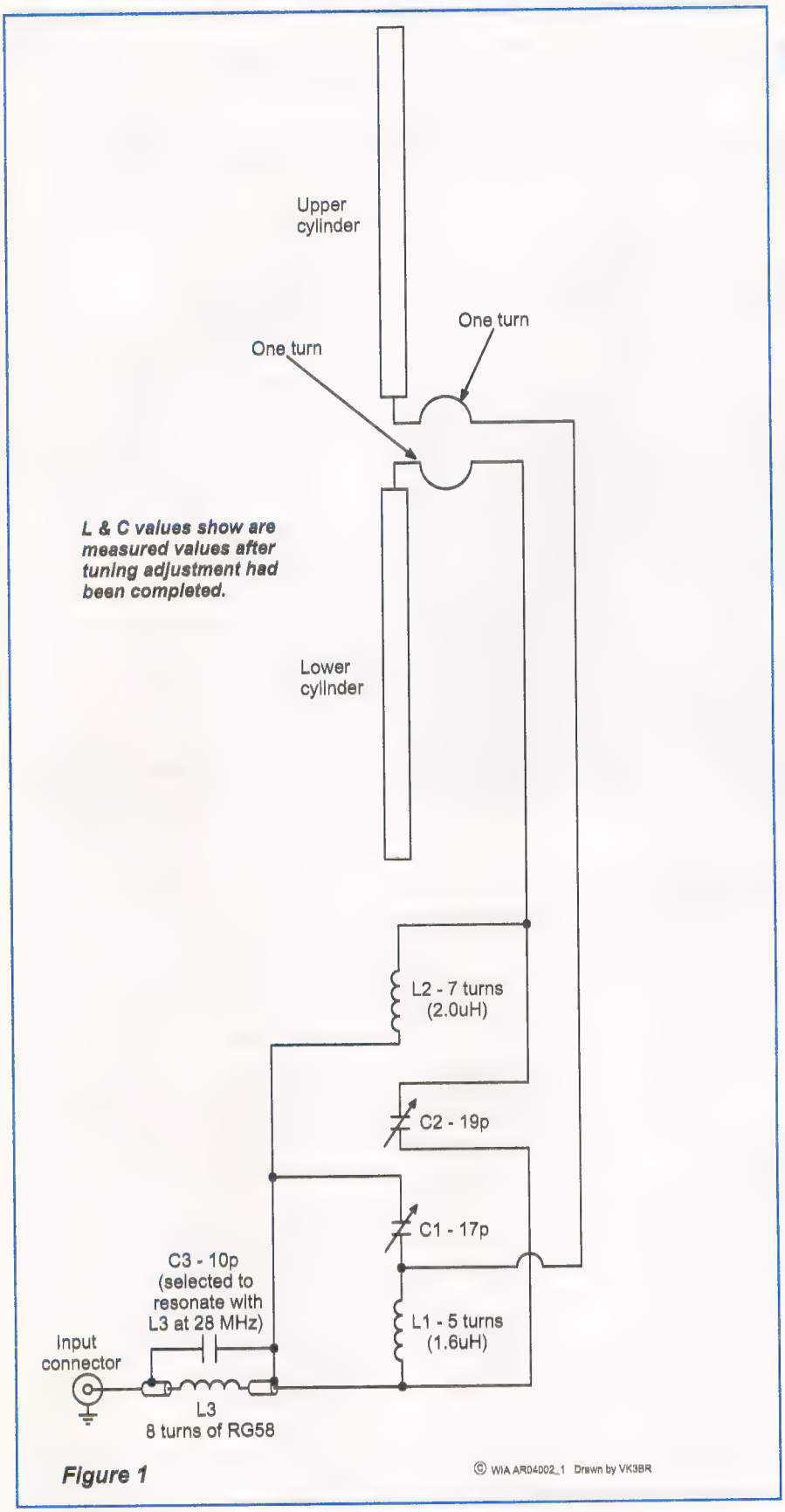

Fig 1 – Circuit diagram of the EH antenna for 10 metre

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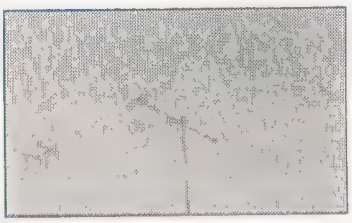

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Photo 2 – XYL Margaret holding the 10 m EH antenna.

Summary

Described is a 10 metre version of the EH antenna using the L+L type matching network. Included in the assembly is a tuned trap which is effective in inhibiting out of balance current on the coax feeder and eliminating interaction between the feeder and the antenna tuning.

Extensive field measurements have not been carried out but limited tests, with the trap fitted as shown, indicate that field strength could be similar for both low and high angle radiation.

Other relevant articles in Amateur Radio magazine

(1) EH Antennas for 20 and 40 metre Lloyd Butler VK5BR, Amateur Radio, April 2003.

(2) The EH Antenna - More Information on how it works and how it has performed.
Lloyd Butler VK5BR, Amateur Radio, November 2003

(3) The EH Antenna - Radiation from Coax - Measurements on Proportion of Power Lost.
Lloyd Butler VK5BR, Amateur Radio, Date: t.b.a

(4) The EH Dipole with the L+T and Star type matching networks.
Lloyd Butler VK5BR, Amateur Radio, Date: t.b.a.

On the Internet

(1) Refer to articles on the EH Antenna by VK5BR at:- http://www4.tpgi.com.au/users/ldbutler/

Or link from:- http://www.qsl.net/vk5br/

(2) EH Antenna web site:- http://www.eh-antenna.com

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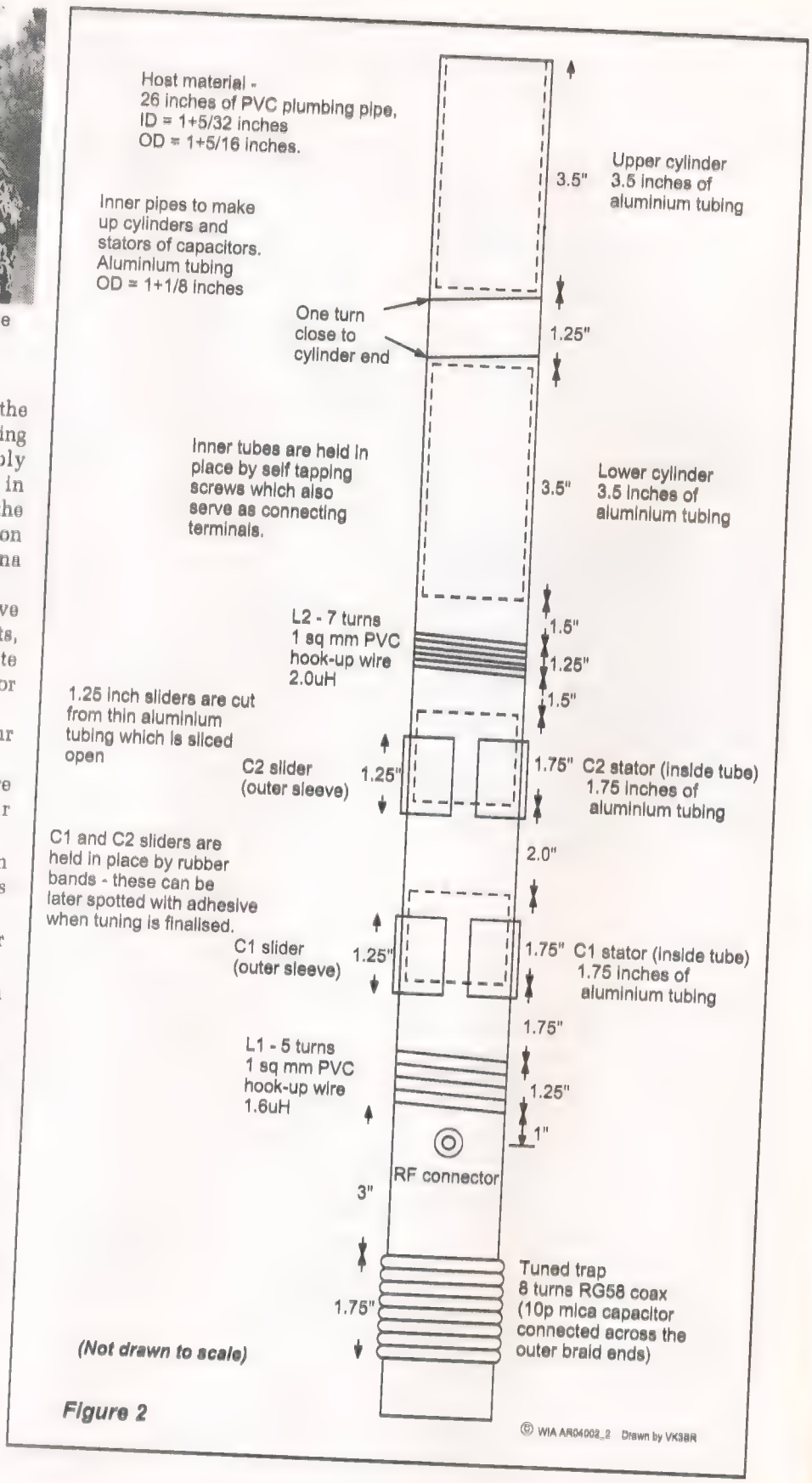


Fig 2 – Assembly diagram of the EH antenna for 10 metre

Our next big adventure:

DXpedition to Baudin Rocks (VI5BR)

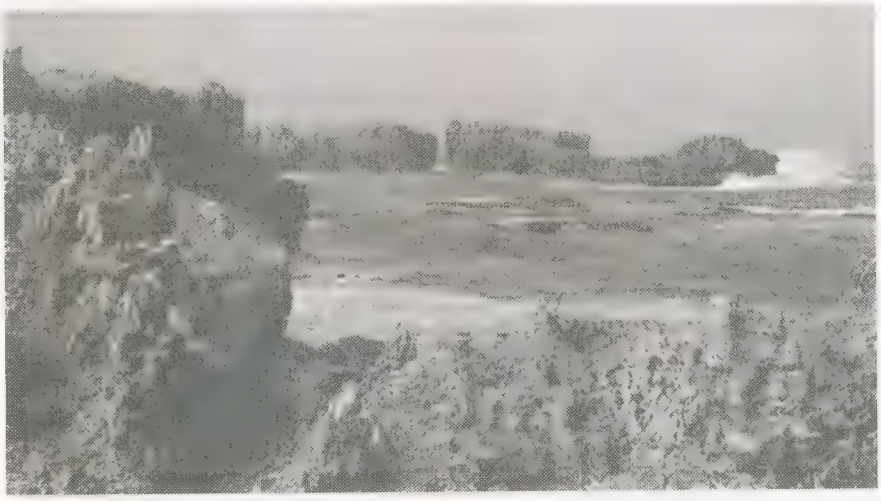
IOTA OC–228 April 8 – 12, 2004

by Peter Forbes VK3QI

After our successful and exciting OC-261 Waldegrave Island operation of April 2003, I began to think about another operation that would provide a link to the historical aspects of the period 1801 – 1804, when so much of the southern coast of Australia was first explored and mapped in detail by the English navigator, Captain Matthew Flinders.

Flinders' work was so detailed that even 200 years on, yachtsmen can still use his charts with confidence and even with GPS available, find them to be extremely accurate.

In 1802, a famous meeting took place between Flinders and the French navigator Captain Nicolas Baudin, in Encounter Bay off the South Australian Coast.



The west side of the Rocks

September 2003 was the 200th anniversary of the death of Baudin and since Baudin's Rocks were part of the IOTA group OC-228, this would make an excellent commemorative operation, with the special callsign VI5BR.

The OC-228 group, in particular Granite Island off the coast of Victor Harbour and slightly further north on the coast, had been activated once only before in April 1999, by Martin (G3ZAY) as VK4CAY/5 and two VK5 amateurs, for a limited number of hours. This made it a relatively rare group.

After making inquiries from the local fishing people in Robe, the nearest town to the rocks, it became apparent that we would need an access permit to land and operate for a limited period.

Being a Conservation Area, we had to undertake not to disturb the flora and fauna, and to remove rubbish and waste on departing. The only thing we left behind were hundreds of footprints on the beach and our human scent for the seals!

The Conservation Park had several penguin colonies (one right next to our operating tents), and resident seals who patrolled the water right next to the beach in search of food. There were many bird species, including pelicans and thousands of pigeons who feed on the grain crops several kilometre away on the mainland, then fly home to the safety of the rocks for nesting.

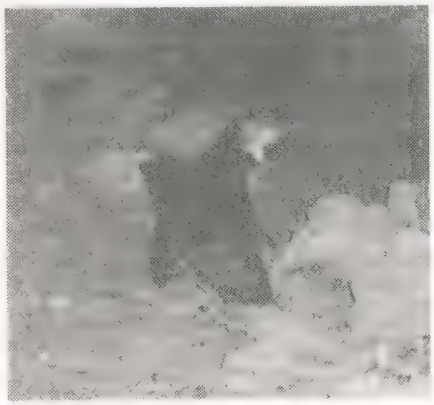
The rocks had one small sandy beach area, about the size of a small house block and access would be very much dependant on weather conditions, unpredictable at any time.

Contact with Don Mount, Senior Parks and Wildlife Officer for the South East District and Mark Kassebaum, operator of Robe Fishing and Charter assured us of permission and access, provided the weather conditions were OK. Dates were arranged for the September 25th-29th period, but with two days to go, the sea was running at 4 – 6 metre swell, 4 – 6 metre waves and 20 – 40 knot winds and remained so for several weeks.

Not to be deterred, we decided to aim for Easter 2004 instead, when weather conditions were generally more settled for longer periods of time.

Over the Christmas/January holiday period we further investigated the landing spot and bought a new operating tent to guarantee better chances of success if the weather turned nasty.

We found that at high tide the beach was almost entirely awash, but since Easter was associated with a full moon and the sun and moon on opposite side of the earth, the peak afternoon tides would not be quite as high as during a new moon. This left us with a beach at high tide of approximately 30 metre long by 6 metre wide to put our tents and share with nine large male fur seals, as we were to soon find out. At low tide, the beach was around 100 metre long and 30 metre wide, so our beach mounted AV-640 vertical antenna would spend about half the time with real waves fully under it.



Two residents of Baudin rocks: fairy penguins

The planning stage

With our four participants confirmed (see opposite), we began the planning for equipment and transportation. With four participants, we decided on one vehicle and a trailer to drive the seven hour trip to Robe, our embarkation point.

Weight was not going to be an issue as Mark Kassebaum, the boat operator, had assured us that whatever we wanted to take, he could manage. His boat was capable of carrying a large group of people in quite heavy seas. Since the equipment would need to be landed by dinghy and the landing could be quite wet, we packaged the equipment in water tight plastic drums of approximately 60 litre which could easily house the transceivers, power supplies and most small items that should be protected from the elements.

Our 240 volt supply was the Honda EU20i, with a backup EU10i. Fuel and water was planned to each be 100 litre for five days maximum, operating. This put the total weight at 700 kilogram (excluding the operators).

Fuel use for the Honda EU20i is stated as one litre per hour, so 100 litre of fuel was needed. As it turned out, the brilliant Honda used only 66 litres for 106 hours of operation so we were oversupplied with fuel.

Our shelter consisted of low wind resistance/low profile tents for sleeping and a large double dome tent for the main operating position.

Food was no problem. Fires were not allowed on the island, but a small gas cooker was used to boil water and make up various meals. The use of flat foil vacuum packed meals makes food preparation and storage easy and safe. We carried sufficient water for five days supply and ended up with a surplus.

Equipment used:

Station 1 (main SSB position)	IC706 MK11G and DX1 linear to a three element TH3MK3 antenna on a five metre mast with a small rotator and located on a high rocky outcrop about 60 metre from the tent.
Station 2 (SSB/CW)	IC706 MK11G with MA1000B 12 volt linear, MFJ 4245 switch mode power supply to a Rippletech WARC tri-band rotatable dipole and/or a homemade tuned feeder wire dipole for 80/40 m.
Station 3 (main CW position)	FT100 with MA1000B 12 volt linear, MFJ 4245 switch mode power supply to a Hy-Gain AV 640 "Patriot" vertical.

The historical connection

About 4, saw a ship ahead, cleared at quarters and shewed our colours. On their shewing French colours with an English jack, shewed a white flag, shortened sail and hove to. On his coming up, found the ship to be the Geographe captain Baudin, upon a voyage of discovery from Mauritius. Hoisted out the cutter, and went on board. At 7.10, returned, hoisted up the boat, and made sail upon a wind in company with the Geographe. Backed the miz top-sail occasionally, to keep company.

(from Flinders' log)

Baudin had explored and charted much of the Tasmanian coastline and was heading northwards towards what was believed at the time to be a possible great inland sea in central Australia. Flinders was heading east, having explored and charted the Great Australian Bight (including Waldegrave Island (OC-261) and was also looking for the great inland sea. Baudin and Flinders met and sailed within sight for two days, exchanging information about what they had found in a spirit of scientific fellowship, despite the looming war between France and England. During this meeting, Baudin warned Flinders about a dangerous rocky island group, which was almost submerged at high tide.

Captain Nicolas Baudin

He gave me of information of a rock lying about 2 leagues off the coast with shoal water about it, at the distance of 22 leagues from his situation on [Thursday] at noon and in the latitude of 37º.1' So.

This was of course what was to become known as Baudin's Rocks.

Baudin was to meet Flinders again, a few months later in Port Jackson (now Sydney), but after that, they never met again. Baudin eventually left Australian waters and sailed towards France. However, on the French island of Mauritius, he took ill and died in September 1803. Coincidentally, Flinders, while returning to England, was imprisoned by the French on Mauritius till 1810, but survived the ordeal and became much more famous than Baudin after publishing his book, *Voyage to Terra Australis* (1814).

After Baudin died, it was left to his Lieutenant, naturalist Francois Peron to make a report of the French expedition to Terres Australes. Only Volume 1 was completed, as Peron died in 1810. It is almost certain that Peron was responsible for the naming of many South Australian features after French scientists, artists and members of the expedition, including himself. Another expeditioner, cartographer Louis de Freycinet drew up the charts and maps of the expedition.

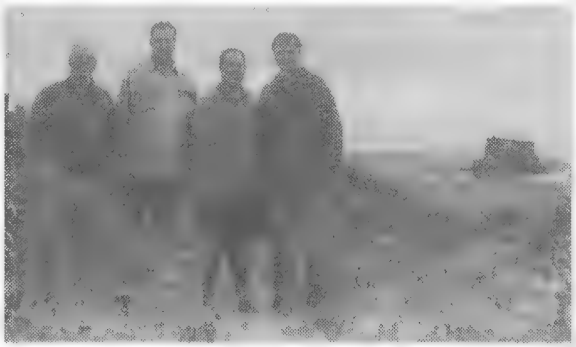
Baudin had been discredited by both early deserters of the expedition and the returning travellers, and French authorities were embarrassed by the apparent failure of the voyage. Remember that this was at the height of the French/English Napoleonic wars. Freycinet bestowed his own choice of place names to South Australian locations, disregarding names that Baudin had recorded earlier.

Despite this, French place names remain on the south-eastern coastline, the south coast of Kangaroo Island, and the West Coast of Australia. Baudin's influence over early settlement policies on the Australian coastline by the English, cannot be discounted.

The team

After some discussion, we decided to limit the number of persons to four, and Tony VK3TZ was invited to join the group to replace Tom VK3ZZ, who was unavailable over Easter.

The operators were:



From left: VK3QI, VK3FT, VK3TZ, VK3WWW

Jack Bramham VK3WWW	A locksmith with Corporate Locksmiths, a keen ARDFer over many years, currently WIA Federal ARDF Coordinator and an experienced Field Day operator. Jack organized the Region 3 ARDF championships in Ballarat, Australia at the end of 2003.
Tony Byrt VK3TZ	Electrical Engineer formerly in the Australian Air Force and involved in other Defence projects, now running his own electronics business, Rippletech Electronics, specializing in amateur related antennas and switching networks and a keen contester and DX chaser.
Peter Forbes VK3QI	A semi-retired Physics and Electronics teacher at Ashwood College, a government school in Melbourne, a keen CW operator (still only needs P5 on CW for the lot!) and particularly interested in ionospheric propagation and IOTA operations.
Keith Proctor VK3FT	A long-serving senior officer in the Victorian Police Force, with much experience in radio operation under stressful conditions, like natural disasters and DXpeditions!

Getting there

We arrived at Robe (some 600 kilometre) around 4 pm on Wednesday 7th. This gave us plenty of time to relax, check out the island access, organize fuel and stay overnight at the Robe Sea-Vu Caravan Park.

The weather forecast for the Easter period was excellent. Good conditions, 23 degrees maximum, 10 degrees minimum overnight, winds variable, strong at times but moderating and most importantly, seas one to two metre swell and waves to one metre.

First light Thursday, we loaded all our equipment onto the boat and quickly arrived off the island (a journey of nine kilometre) where we anchored about 100 metre off shore, around 8 am. In six trips, using a long rope to pull the dinghy back and forth we were able to transfer the operators and equipment to shore without incident, save for a few wet operators relaunching the dinghy in the waves.

Assembling the station went smoothly, having set up the antennas and tents many times before. We had to make sure no vegetation was damaged in assembling the antennas on the top of the rocks where the penguins nested

Also we had to establish territory over our piece of the beach from the nine male 400 pound fur seals who normally lived there. By two of us approaching a seal together, we had height and size advantage over the seal, who would then back off. Interestingly, after a few confrontations, the seals quickly established that we were not a threat to them (and vice versa) and by the end of the first day, they behaved as if it was natural for humans to cohabit the beach with them.

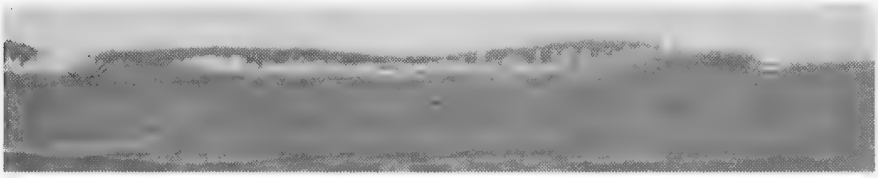
Sleeping with seals

Nevertheless, sleeping in a tent with a 400 pound seal on the sand two metre away does make you a little wary. My sleeping tent was the nearest to them, as the others reckoned with all the pre-packaged tuna meals I consumed on the rocks, I was probably the closest relative to the seals anyway!

Already up and running

By 5 pm local time (0730Z), we were ready to hit the airwaves with all three stations operating.

After our Waldegrave Island operation I had built a set of the excellent W3NQN bandpass filters for each band. We were able to operate three stations from within the same tent on 40/30/20,



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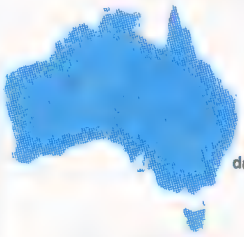

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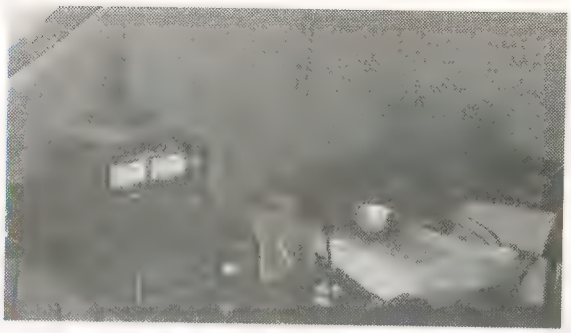
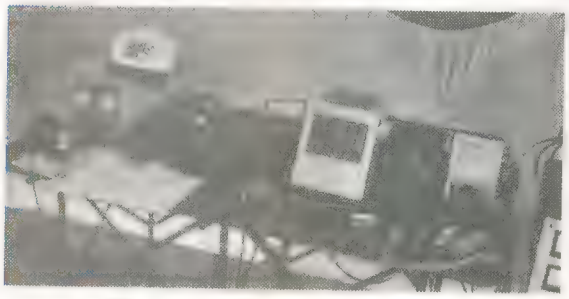
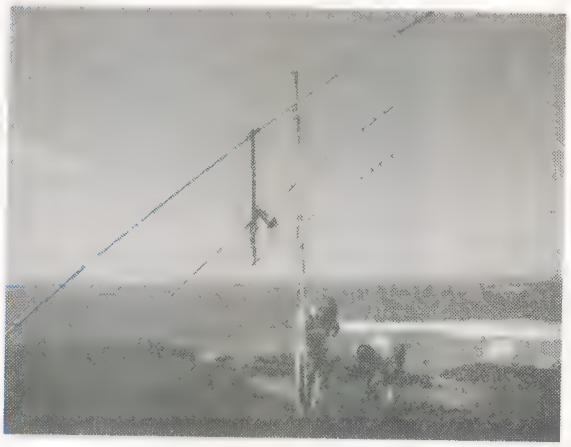


The main CW operating position



The main SSB operating position



Beam with rotator fallen apart

30/20/17 or 20/15/10 m with very low mutual interference.

Operating 10 and 12 m at the same time was still not possible, as the bandpass filters were not quite good enough at such close frequencies. Future improvements will include double bandpass filters for these bands.

Many operators in typical urban and semi-rural high noise areas would not be unaware of this sort of interference, but on Baudin Rocks, the noise floor was essentially zero. We had been able to eliminate ALL noise from the Honda generator with appropriate filters and earthing; and receiving conditions were such that when turning the 20 metre beam towards Robe (some 8 km distance) we could detect the power line noise from the town and surrounding area of the mainland.

The only mishap we had with the equipment was quite amusing.

The four bolts between the lower mast bracket and the rotator base worked loose in the wind, probably vibration induced. The beam was being rotated when the last bolt dropped out and the beam gently spun around like an auto-gyrating helicopter and slid to the ground along the guy ropes supporting the mast. The only damage was a bent reflector tip, which was quickly repaired by reversing it in the swaged element end (although it did have a 90 degree bend in it). In our extensive tool kit, we found some replacement bolts and had the beam up again within the hour with re-tightened bolts on the rotator bracket.

Better than expected results

We planned to use the IOTA frequencies exclusively and our aim was for better than 5000 contacts in the planned 100+ hours of operation. The emphasis was on working European stations, who have the largest number and keenest of IOTA chasers, especially long path on 20 and 17 m from 0500Z to 1000Z. We knew from past operations, that this was the prime time for European DX.

Our strategy worked better than expected. The following was achieved.

7700 Total contacts:	With phone 3200 and CW 4500
Number of countries worked:	102
Hours of radios setup on island:	0700Zz Thursday to 2100Z Tuesday = 110 HOURS
Average contacts:	70 contacts per hour

Checking on the various Internet IRC chat channels after the event and the

DX Summit packet spots, it was obvious that if you had been at all active during our operating period, you would have worked us on at least one of the bands/modes.

The only disappointing aspect was the lack of PY, CE and LU contacts on any band. We stood by for these areas regularly but conditions just weren't right, despite the good work of our on-shore pilots in arranging skeds. PT7WA had skeds with us and made a scratchy CW QSO on 20 m but very few other contacts were made. The difficulty is that the path is directly over the South or North Pole and even skewed directions take the signal through the high absorption auroral zones.

The down side of Cycle 23

Being on the descending side of Solar Cycle 23, radio conditions are often disturbed for long periods of time.

Over these five days, the A index ran at 16, 15, 10, 8 and 10 and the solar flux at 90, 92, 95, 95 and 97. Conditions were stable on all bands from 40 through 10 m.

The Easter break being close to the equinox meant absorption over the important North American and European paths was still relatively low. Across the Pacific, conditions on 10, 12 and 15 m were quite good with openings to North and Central America. Long-path conditions on 17 and 20 m were very good to Europe and the Middle East and short path on 20 m to Europe was reliable, but not strong.

30 m and 40 m provided excellent conditions for CW operation, in fact around 1430Z each evening (midnight local time), it was possible to contact right across the Northern Hemisphere on 30 m. As well, long path on 30 m to Europe was outstanding with openings from 0600Z to well past 1000Z.

Weather conditions were as expected – the wind was particularly strong on the Saturday, but our operating tent took it well. We used our equipment barrels as anchors in the sand to help reinforce the outer skin of the tent.

By Sunday the winds had dropped and by that night the air was absolutely still. With a cloudless sky and the moon rising later in the evening, the stars were extremely clear.

View to south west from beam

The only significant rain we had didn't arrive until we were packing up the tents on the Tuesday morning, and then it was more of an inconvenience than anything else.

As we had found on previous operations, behaviour by all those on frequency was excellent, with a quick

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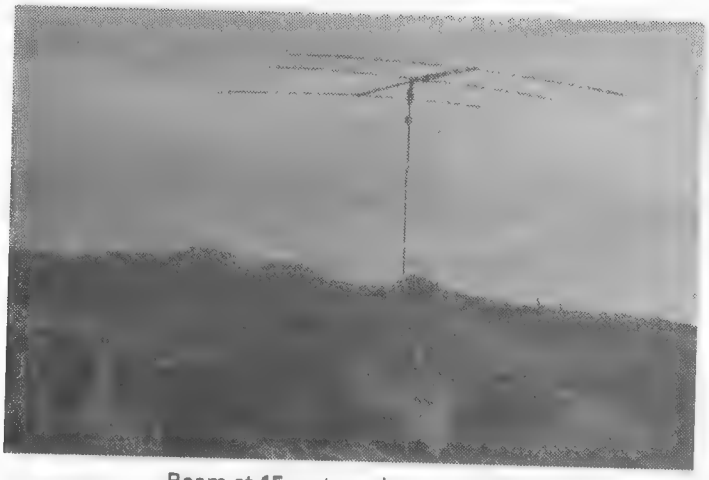
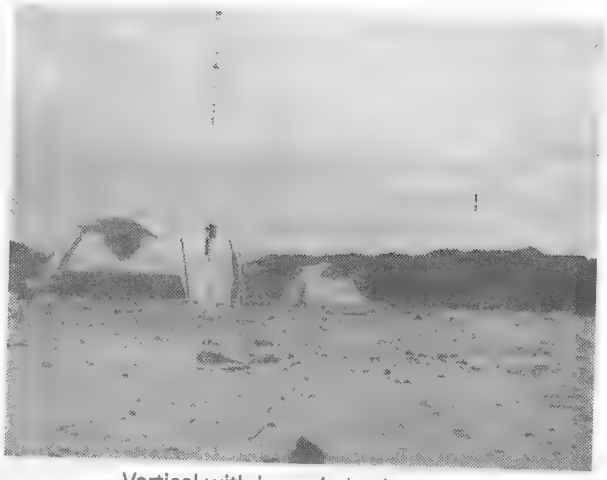


Beam at 15 metres above sea level



Vertical with beam in background

rate of contacts being maintained, often with a single split frequency. Early on the first day of the operation there were a few problems with running by numbers, but that was unnecessary after that first long path opening to Europe.

Judging by the comments on the DX packet clusters, the only problem was too much IOTA activity from T33, ZL7, VI5 and 3B9 all on the same bands at the same time!.

Both the FT100 and IC706 rigs performed flawlessly, with the FT100 far superior to the IC706 for CW contacts. This is not a biased comment, as I own and regularly operate both rigs. Even with both having 500 Hz filters, the "CW feel" with the Yaesu is superior.

Tony VK3TZ tried out some CW for the first time under DXpedition conditions and made a good fist of it on the various bands. He was able to confirm the same comment about the CW performance of the FT100 in comparison with the IC706.

The MA1000 amplifier was used in conjunction with the MFJ 4245 switch-mode power supply, which is a light weight 45 amp/13.8 volt power house. Although the MA1000 is capable of 500 W PEP output, the power supply would overload at that level. So we adjusted exciter drive to run around 250 W PEP output. In this way, the amplifier and exciter were running cool.

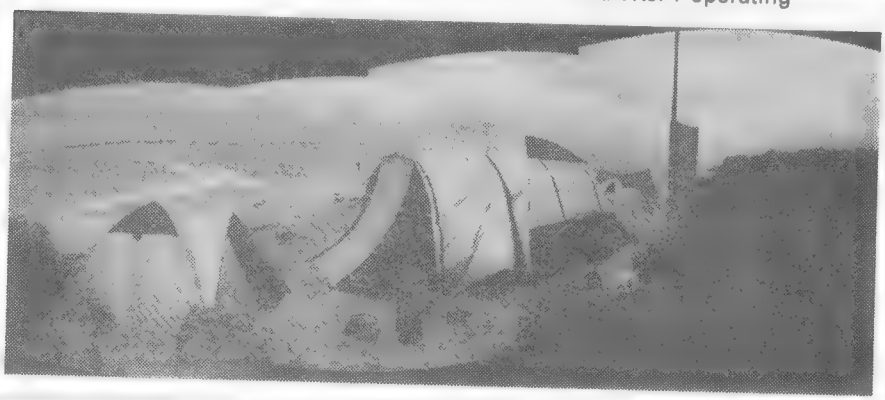
The Emtron DX1 linear worked perfectly, and was well matched to the EU-20i generator's continuous 1600 watts output.

By far the most interesting aspect of the operation was the relative performance between the 3 el tri-band beam on 20, 15 and 10 m (at a height of 15 metre above sea level and with a perfect takeoff), the Hy-Gain AV640, mounted at water level (right in the waves) and the WARC tri-band rotatable dipole (at a height of 15 metre above sea level and with a perfect takeoff).

The horizontal antennas had the advantage of better noise rejection and some directionality on reception, but given that the vertical worked from 6 to 40 m and worked really well on all

Vertical on beach at water's edge

Night time operating from the Shack, VK3TZ and VK3FT operating



those bands, it continues to be our first choice for any future expeditions. On 30 and 40 m in particular, the strength of our signal in Europe, USA and Japan as reported to us by some reliable sources was nothing short of outstanding for the power levels involved.

We figured out a way of assembling and disassembling the AV-640 antenna into two bundles of four metre length, with the various aluminium stubs and stainless steel counterpoise rods stored inside one of the vertical sections. Erection and dismantling time was fifteen minutes, each time.

Homeward bound

Our last contact was on Tuesday morning at 6.30 am, (12/4, 2100Z) We expected the boat to pick us up at 9 am so, despite the rain, began dismantling the site from just after daybreak.

The trip back to Robe was uneventful and we immediately drove the seven hour trip back to Melbourne, rather smelly after five days, but eager to get home.

Was it worth it? It would be fair to say that the four of us not only enjoyed the operation, but also gained an enormous sense of pride in a job successfully completed, without incident.

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Helpers

No expedition can be successful without the assistance of others.

David VK3EW, Tom VK3ZZ and Roger VK3FRS acted as our unofficial pilots. We had access to them via mobile phone and they could spot us on various frequencies quickly and accurately. This maximized the chances of operators working us when the bands were open.

Jim Linton, President of Wireless Institute of Australia (Victoria) for assistance in obtaining the special call sign VI5BR.

Mark and Tammy Kassebaum of Robe Fishing and Charter and their two deck hands, who transported us safely to and from the island and provided us with much useful advice on the location.

Parks & Wildlife, Department for Environment and Heritage, South Australia and, in particular, **Don Mount** for his friendly cooperation.

And to all the operators around the world, who made our experience such a pleasurable one. The positive comments on the piles of incoming QSL cards really made the adventure worthwhile.

QSL information

Direct with SAE and postage to QSL manager:

Peter Forbes VK3QI
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Via the VK3 Bureau

Where to next?

Many operators have contacted us about possible operations from other Australian island groups, some of which have been activated only once before and for a limited time or under adverse conditions.

We would be interested to hear from others on their views as to which island groups would be the most in demand. An e-mail to any one of us with your views would be appreciated.

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Charlie's Way

The final chapter of a short story about a ham, his mates and the CW receiving exam

Ross Fraser VK2WN

Part 5 - 'Stop kidding!'

AFTER A FEW MORE WEEKS Charlie was feeling much more confident about the upcoming exam. He had been practising at home, using his computer to generate CW. He had been copying close to one hundred percent with speeds at twelve words-per-minute, and sometimes faster, for about 5 to 7 minutes at a time. Sometimes he made more mistakes than he wanted but that was happening less and less as he practised more and more. He knew he still had to pass the exam but was feeling much happier about the situation.

Finally the day of the exam arrived. He didn't sleep too well the night before, and as he sipped on his cup of tea he started to get an attack of the nerves. He shivered briefly and realised he had to change his focus so he wandered into his shack and switched on the radio. His radio was an 'oldie' but it didn't have any glass bottles for finals so when he switched it on it was ready to go. The broadcast band radio was on in the kitchen and he could hear the news mark so he knew it was 7 am. The net would be on or starting pretty soon.

The signal strength meter wavered around the 20db mark 'Oh' he said when he realised the volume was down. As he rotated the volume knob clockwise he could hear Steve talking.

'....and this station from China was peaking at 10 over....clear as a bell.... they said they were using 300 watt and a 4 element monobander 80 feet up.... a lovely signal....and she had a really sweet voice too'

'Did you say her signal was PEAKING or that she was in PE-KING, Steve, hi hi?' said George purposely emphasising the second syllable of Peking. George identified his station and then Steve's as he passed it back to him.

Steve announced George's callsign and then his own before saying slowly 'Very good George' with just a hint of sarcasm '...and Raptor is rolling around in hysterics just outside...I'm laughing on the inside' Steve has a dry sense of humour. Steve paused and then wondered out loud where Charlie was this morning. Charlie heard this and reached over for the desk microphone.

He paused, briefly, before saying 'I'm here..and it's windy outside...is that down to you George? Big exam today... better get some last minute practice in... I'll catch up with you blokes tomorrow morning and let you know how I get on' Charlie passed it to George

'No worries Charlie-boy...all the best, deep breaths and all that stuff. Yeh it is windy...but if it was down to me it would be MUCH windier! Take it easy and above all HAVE FUN. 73 for now. Over to you Steve'.

'Those sitting for exams – 5 minutes' called out the invigilator. Charlie's skin crawled. He focused on drinking his coffee and looking at the old books and things. 'I can do this,' he said out loud to himself.

Steve offered his best wishes also and Charlie thanked them both and closed down his station for the morning. Listening on the side (sandbagging) was Colin. He had a surprise for Charlie.

Charlie arrived at WIA house, Parramatta. As he parked his car he noticed that he felt a general sense of calmness and also realised that he was looking forward to the exam. Momentarily he wondered whether this was a good or a bad thing. But he quickly changed his thinking pattern and thought to himself that it's much better to be calm than shaking like a leaf, which is something, he'd done at previous exams. As he wandered up the stairs he could hear a mild chatter coming down the stairs. He noticed the display cabinets to his left and right with old valves, microphones and other assorted old radio bits and pieces. He always stopped and had a quick look at the cabinets. It made him feel comfortable and gave him a good feeling.

Charlie signed the visitors' book and went off to make a cup of coffee. He walked past a fairly young bloke sitting in the comfortable lounge chairs who looked particularly nervous. 'I'm only imagining it' Charlie thought to himself. 'G'day' he said softly but hopefully in a reassuring way. 'Hey' said the young fella, seemingly happy to be noticed. He went back to reading his theory book and Charlie went round the corner to get his coffee.

'Those sitting for exams – 5 minutes' called out the invigilator. Charlie's skin crawled. He focused on drinking his coffee and looking at the old books and things. 'I can do this,' he said out loud to himself. He noticed the young fella again, this time he was walking around, book in hand and reading intently. Other people were also walking around, some with a hot beverage and there were two fellas talking expressively about antennas.

The people sitting for exams were seated and were then given some general advice and the exam rules were explained to them. Charlie had heard it all before but he listened anyway. 'We'll start the receiving exam first and then get the theory underway. So those students...um let's see...(she looked down at the papers in her hand) the three of you doing the Morse please make your way over to the office just where you came in'. Everyone else could you stay here, please.'

Charlie went to gather his things off one of the lounge chairs. He heard some laughter and some animated talking coming from the office area. Some other people had also noticed and were looking in the area of the stairs. Charlie went to have a look. Just as he rounded the hallway he could see what the commotion was about. There was a cat sitting on the table where the visitor's book is kept. It was Tiger. Charlie walked

Special Event Radio Station ON60CLM

Postbus 1006 - B-8300 KNOKKE-HEIST - BELGIE

On November 1st 1944 the town of Knokke was finally liberated at great cost of Canadian lives. Each year the fallen Canadians are remembered with ceremonies, festivities and a "Canadian Liberation March" on November 1st and during the Canadian Week. Many Canadian and Belgian veterans, VIPs and radio amateurs are participating in the events.

This year the Special Event Station ON60CLM (suffix stands for Canadian Liberation March) will be on the air for the twenty third time from 5th until November 9th, 2004.

The Special Event Radio Station is operated by members of the BAFARA (Belgian Airforce Amateur Radio Ass.), the BMARS (Belgian Maritime Amateur Radio Soc.) and operators of the IPARC (International Police Amateur Radio Club) as well as our own ham-operators.

Again a multi-coloured ON60CLM Award will be available to all licensed amateurs and SWLs for any contact with this Special Event Station. They will also receive a beautiful QSL card. Cost of the ON60CLM Award is 5i, with all proceeds going to a welfare fund. The money is used to maintain memorials and to keep the station ON60CLM next year on the air.

You can contact or listen to ON60CLM on the frequencies below.

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website: www.on4clm.be
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Frequencies (in MHz.) ON60CLM

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FM									145.475

URLEmail www.on4clm.beinfo@on4clm.be

Charlie's Way *continued*

up to him and gave him a pat and a rub on the side of his head. Tiger looked contented and started to purr loudly. Everybody was looking at Tiger and most were smiling.

'He's going to sit the CW exam for you, Charlie,' said a familiar voice. It was Colin who was leaning against a cabinet with old radio stuff inside.

'I don't need him to – and what the hell are you doing here anyway?'

'We're the cheer squad – but you sound confident so we'll be off then'

'Don't you dare' said Charlie forcefully and then added gently 'but I'm glad you came down. It's a nice surprise'

'No worries mate' Colin said amicably

'No, not you, Col. I was talking about the cat'!

Before Colin could respond the invigilator called out from the office saying 'Okay students' and waved Charlie and others into the room. She looked down at Tiger who then rubbed against her outstretched hand.

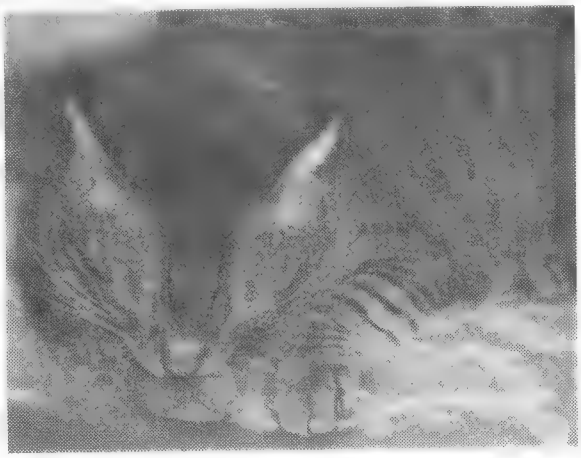
'Good luck,' said Colin. 'Thanks' said Charlie.

Charlie turned towards the office door. He paused and stroked Tiger before entering the room and closing the door. Tiger got down and looked at the office door, then down the hallway before walking over to Colin who picked him up.

Epilogue

Charlie passed his Morse receiving exam making only two errors. Almost a month to the day after sitting the exam he got his results. That same day Charlie drove down to the Australian Communications Authority office in Sydney and got his unrestricted licence. He was only mildly disappointed to find that VK2CAT was taken!

Steve still thinks his dog is mad. George still has a wind problem (luckily flatulence doesn't travel across the airwaves). As for Colin, he's just happy to have helped a mate, although he still says that the biggest boost Charlie received was from Tiger!



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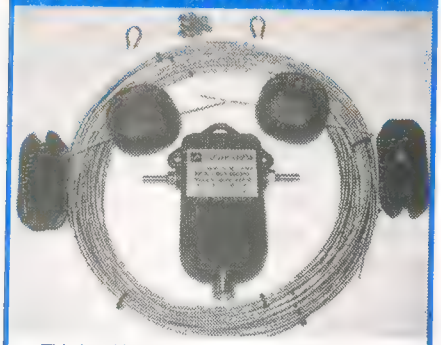

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Beyond our shores

David A. Pilley VK2AYD
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South Africa

Under proposed new Radio Regulations for South Africa, the Morse requirement for a ZS licence will be replaced by a number of assessments. Candidates wishing to obtain a ZS licence will have to complete any one of these assessments, and the choice of which assessment to attempt will be up to the candidate him or herself. SAREL Council has published these for comment.

1. Confirmed contacts with 100 different stations on any band and mode.
2. The construction of a direct conversion or superhet receiver or a crystal controlled transmitter for any amateur frequency and mode.
3. 50 hours of public service communication at sports events, disaster preparedness exercises and educational stations.
4. A professional tertiary qualification in electronics or radio.
5. Morse code proficiency at 5 words per minute.

Prior achievements will be recognised, so anyone who can show that they have already fulfilled the requirements for any of these assessments will be able to apply for a ZS licence as soon as the new regulations come into effect. Full details of the assessments can be found on the SARL's web site www.sarl.org.za

(QNews)

Andorra

Andorra is now active on 6 metre According to Johan, ON4IQ, Andorra has released the 6-metre band to all resident amateurs. He reports that C31JI and C31HK are both active on the band.

(QNews)

Somalia

The nation of Somalia has acted to grant its ham radio population a power increase to 3 kilowatt. That's right. 3000 watt and that's 3000 P-E-P for SSB and 3000 watt average for other modes. Somalia is also letting hams use the 88 to 108 MHz band for F-M and permitting Amateur Television broadcasts to be conducted on any unoccupied standard VHF or UHF television channel.

The Ministry of Information, Telecommunication and Culture in Somalia has made these changes and more as part of action to implement the W-R-C 2003 accords. Additional frequency allocations for amateur radio experimenters in Somalia include Zero to 9 kHz, 70 to 90 kHz and 130 to 190 kHz. Medium Wave frequencies include 495 to 526 kHz, while on the High Frequencies the hams of Somalia get 5.060 to 5.450 MHz and 26.100 to 29.700 MHz excluding the sliver band from 27.995 to 27.999.

This Ministry is promoting Somalia as the best holiday and research destination for visiting radio amateurs. This, as a way of attracting skilled people to help the local Somali people become ham radio operators. Abdikariim Ali Sulatn in Puntand State Somalia confirmed again that Aussie Amateur Sam Voron, 6OA, will continue to conduct ham radio licence qualifying courses and issue amateur radio licences free of charge "in the name of this Ministry" until a national Somali Amateur Radio Society is formed. If you are planning to go there, a Somali Visitors Amateur Radio Licence is now issued to any class of overseas amateur radio licence holder as a courtesy. It is free of charge and issued for life unless cancelled by the Somali Government. Talk about an inducement to visit a far off land.

(ARNewsline)

Norway

No more annual fees

Norway has decided to make all current licences valid for LIFE or until cancelled. No more to pay! New licensees however will have to pay a one up fee. Government administration expenses reduced! It is interesting to see what it will do to the recruitment of new Radio Amateurs.

(source LA7TF/VK2WF)

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Silent Key

Archibald Stephen Woolnough VK3BW

1909 – 2004

Australian amateur radio lost one of its true and early radio pioneers with the recent passing of Arch Woolnough, VK3BW, on February 12th 2004, aged 94 years.

Arch was first AOCP licensed in 1929 and immediately provided a radio service to local residents of his hometown in Portarlington, Victoria, using equipment, which Arch had built himself operating on 1600 kHz.

Arch was a foundation member and life member of the Geelong Amateur Radio Club, a member of the Radio Amateurs Old Timer's Club and a member of the WIA for many years. Over many years, Arch established numerous lasting friendships with amateurs both within Australia and all over the world. His proficiency at CW was unsurpassed, and at every available opportunity he would keenly pursue this passion. Although most active on the HF bands, Arch operated and enjoyed all modes and all bands. His knowledge of radio, his technical ability and his preparedness to help others was exceptional.

Arch lived at Portarlington on the Bellarine Peninsula, Victoria all his life, where he owned and operated a Busline company previously founded by his father in 1904.

Arch was very proactive in his community, this community service was recently honored by Rotary International's highest award – The Paul Harris Medal – a truly remarkable and well deserved achievement.

Nature's gentleman, devoted family man and loving husband Arch Woolnough leaves us with a host of happy and lasting memories. He will be greatly missed by all who had the privilege and pleasure of his genuine warmth and friendship.

Submitted by David McLachlan - VK3ADZ

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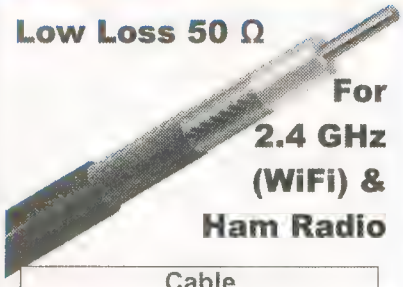

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CRARC Forward Bias

Peter Kloppenburg VK1CPK

As the VK1 Division has changed its name to Canberra Region Amateur Radio Club (CRARC), the heading of this column shall from now on include the abbreviation CRARC.

The executive committee members signed the document that contains the clauses to separate the ACT Division from the National WIA early in July. President Alan Hawes, Vice-president Phil Longworth, Treasurer Bob Howie, and Secretary Deane Walkington put their name to the document to authorise the separation. As a consequence, some significant changes will occur in the coming months, as was foreshadowed by President, Alan Hawes, during the General Meeting held on Monday, July 26, 2004. Alan said that the erstwhile division is now called "Canberra Region Amateur Radio Club". This name change will be notified to the Registrar General in due course, together with an updated version of the Club's constitution. These changes are mainly administrative ones concerning word usage such as Division/ Club, ACT Division/CRARC, etc. All of these changes will be explained and voted on by the members during the November general meeting. The guest speaker at the September meeting will be Graeme Cashion, who will speak to the subject of military radios and will show part of his collection.

The next General Meeting will be held at 8.00 p.m. on Monday, September 27, 2004.

VK2 News

Tim Mills VK2ZTM.

In June all [VK2] members received a letter from the Membership Secretary Terry VK2KDK. Many thanks to those who have responded. If you are still to do so - please send it off during this month.

In the Sunday [VK2WI] news on August 8th a joint statement was included from President Chris VK2QV and Membership Secretary Terry VK2KDK With a couple of minor wording adjustments here is their report.

Recently the NSW Division sent out an information letter with an optional survey to the members, pointing out to them the various options regarding the Division and the National WIA. We might add that this letter has resulted in some confusion in relation to the choices offered.

A number of respondents provided comments on return of the letter and these replies have been noted by the Divisional Council. The letter brought some interesting results. Of the respondents so far, a small number indicated they would join the National Organisation only. A similar number indicated they would only be members of this Division. The majority of you who replied indicated you wished to become members of both organisations.

Council met on August 13th last, discussing both the membership issue and other matters of importance regarding the future of this Division.

Please be assured that the membership of this Division will be kept informed of developments in these areas. In the meantime, the Council extended the membership of NSW for those of you whose renewals fell due from July through to 30 September 2004. The reasoning behind this was to allow current members to have a say in the future of this Division should an appropriate meeting be held. Please note that there is currently no method of collecting fees for this Division, as that agreement terminated with the National WIA on 30th June, 2004. This membership extension does not apply to the National WIA renewals of course, so if you want to continue receiving AR, for example, you will need to forward your renewal to them.

Until next time.

73 from Chris, VK2QV, WIA NSW President and Terry, VK2KDK, NSW Membership Secretary.

Again the deadline for the notes is between meetings of the Council so news is a bit scarce with the lead-time involved. A reminder for those able to get to Parramatta - that there is a Trash and Treasure event on the last Sunday of this month - the 26th at 12 noon. It is followed at 1.30 pm with a meeting in the Library of the Home Brew Group.

For those who wish to undertake the exams conducted at Parramatta, the next one will be held towards the end of October with an application closing date mid October. There will be one more Parramatta exam before the end of the year. Contact the office for details and booking. Several clubs also conduct exams so check with your local group if required.

Mentioned in previous notes was the availability of "EH" antennas from the Bookshop. Several have been sold and a few remain. They are single band units and the stock on hand operate on 160, 80, 40 or 20 metre. For these and other Bookshop items check out the web page or contact the office.

All for this month.

73 - Tim VK2ZTM.

VK7 News

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au
Divisional Web Site: www.wia.org.au/vk7

Divisional News

On 14 August a Divisional Council meeting was held to discuss steps to finalise the implementation agreement between the Tasmanian Division and National WIA. The culmination will be a Special General Meeting that is scheduled for September. The ratification of the implementation agreement will see the three branches of the division become affiliated clubs of the National WIA body.

Paul VK7BBW, Divisional Intruder Watch Coordinator reports that he got a call from ABC National Radio in Canberra regarding their intrusion on to 1.854Mhz.

The ABC National regional transmitters are centred in Canberra. What occurred was a failure in a series of traps, in one of the transmitters that filter unwanted signals. They have a series of traps set at 1600khz, 1700khz and 1800khz approximately, and the third in the series failed, causing a mixing of signals from all three, throwing out a spurious at 1854khz.

The fault has since been rectified, and he rang to apologise to the amateur community for the incursion. Thanks to the ABC for caring, and the ACA for also taking the time to assist us. "Wish it was all as easy as that" Paul said!

Tasmanian Hamfest 2004

Dave, VK7KDO and Dave, VK3JKY have let me know that the Central Highlands Amateur Radio Club of Tasmania (CHARCT) in conjunction with the VK7 Division is holding a major Hamfest at the township of Miena on Saturday December 4, 2004.

Miena is located in the Tasmanian Central Highlands close to the geographical centre of Tasmania. The venue is the well-appointed Miena Community Centre.

CHARCT intend to have several operating displays, which should include a full operational HF/VHF/UHF station, A CW station, a demonstration of amateur TV plus several prominent guest speakers.

The doors will be open at 11 am Tasmanian Summer Time and continue through to 3 p.m. Entry requires the donation of a gold coin. Coffee and tea will be provided and food will be available.

All are welcome and for more information check out the hamfest page on the CHARCT web site www.charct.net.

Branch Meetings

Northern Branch Meetings

July 9 saw a successful evening at the Hunga-Munga Cafe owned by VK7HAH, David and Norma Potter. The format for the evening was a magazine swap night, culminating in a record attendance of old and new members, congratulations David on a highly organized evening.

Southern News

Firstly congratulations to Martin, VK7GN on coming third in the VK/Trans Tasman contest CW category. Robert Milne, VK7ZAL/AX2TAR is our Low Frequency experimenter and has been regularly transmitting on 181.4 kHz. Robert transmits CW with power of one kilowatt into a 35 ft mast from Moonah, Southern Tasmania. Robert has had reports from VK3, 5, 7 and ZL. Keep your ear to the Divisional broadcast for transmission times.

Southern Meetings

On July 14 members and visitors were treated to a discussion on the usage, etiquette and idiosyncrasies of Repeaters, IRLP and Echolink systems. I think all of us learnt something from the information and lively discussion that occurred.

July 28 saw the last of the trial of experimenter's nights for a while. We had a healthy turnout and had a short presentation on position encoders and discussed the variety of types, modes and techniques and then moved onto a

continued next page

VK7OTC QSL card for the LightHouse/Lightship weekend (Image courtesy of VK7XRN).

Queensland State Championship —

Horse Endurance Ride 2004

The Tableland Radio Group based on the Atherton Tableland inland from Cairns, provided members for radio checkpoints from 4 pm on 31 July to 4 pm on 1August for the State Endurance Championship at Wondecla, near Herberton. Members participating were Alan Whiting VK4HBN and XYL Val, Stan Alridge VK4MFA, Dennis Bauer VK4JDJ and Mike Patterson VK4MIK.

There were five differing tracks covering a variety of terrain with differing difficulty for riders. A number of horses were vetted out and there were a couple of withdrawals due to the toll taken by the continuous riding over the tracks.

The group used 2 metre, simplex and duplex operation, as well as UHF CB. Prior to the event the checkpoints were checked for accessibility and, if possible, radio usability. Checkpoints were manned for the entire duration and prior planning in formulating the checkpoint roster proved invaluable. Messages were passed back to base regarding horses passing the points as well as farrier assistance, and early warning of a group of lost, temporarily, riders and a rider withdrawing.

Val kept the information board, rider position and time, up to date and put in the night slowly filling up the board and answering numerous inquiries from family and friends on whereabouts of riders.

The endurance riders were grateful for the safety the radio coverage provided whilst the Tableland Radio Group members enjoyed the experience of running the network and rearranging operators for checkpoints. It was also invaluable in working with another community organization.

There was an interesting situation in the late afternoon of the first day when a temperature inversion dramatically reduced radio coverage for a period of time – by using closer stations information was able to be got through to base.

A positive aspect of the event was it gave non-hams an insight into our hobby of Amateur Radio and the various technical aspects.

Mike Patterson VK4MIK

WIA puts the FUN back into Amateur Radio

The WIA has obtained the call sign VK for FUN (VK4FUN).

"VK4FUN will be used for special event operations promoting amateur radio to the general public, with a particular focus on school kids", WIA Director Glenn Dunstan VK4DU said. "We decided to obtain the call sign following the success of the RSGB with their GB4FUN station"

VK4FUN will be available for use by clubs and groups on application to the National WIA.

VK7 News *continued*

video presentation from Jim Tregellas, VK5JST on stepper motors and their construction, theory and methods to drive them.

August 4, discussion was held with both the Wednesday afternoon and night gatherings about the Southern Branch's move to becoming a club. We had a total of over 40 members and visitors hear about the proposal, run through the draft rules and have their say about the move to a club structure and about how it is proposed to work. These valuable comments are currently being considered and those questions raised at the meeting are being researched.

Experimenters' Nights Wrap-up

Thirteen nights were held between April and July. The nights included video presentations, hands on experimentation, demonstrations, lectures and rag-chews over a coffee.

We had a total of 70 people involved with 49 members and 21 visitors and non-members. I think the time of year was an issue as attendance was down on the cold and wet nights. I have to thank the Adelaide Hills Amateur Radio Society again for the loan of some of their lectures and presentations.

There is a lot of work that went into some of these nights in the researching and preparing of the subject matter and this takes valuable time. I thank all those who put in time and effort and came along to the nights.

WICEN News

Roger, VK7XRN has let me know that WICEN South now have a new website courtesy of Nick, VK7HAF. The address is: http://wicen.taswireless.net/

Some of the WICEN South team will be operating from the Cape Bruny lighthouse during the International Lighthouse/Lightship weekend on the Saturday 21 & 22 August. The official weekend identifier is AUS-024 and Cape Bruny is on the Southern most tip of Bruny Island and forms one side of the D'entrecasteaux Channel. They will be operating VK7OTC portable, the Southern Branch club callsign.

Erratum

In July 2004 VK7 Divisional news, North West News reported Tony's callsign as VK7ZX it is VK7AX, apologies Tony!

JOTA for Scouts in SA

Lea Adcock
RIG Coordinator Scouts Australia
SA Branch
Ph: (AH) 08 8381 5909 Mob: 0412 347 808
Email: adcocksl@iprimus.com.a

Most of you would probably know about JOTA (Jamboree On The Air) and what it's all about, you may've been an operator at some of the stations located around SA or in another state. JOTA is held on the 3rd full weekend in October. This year it will be held over Saturday and Sunday, 16th to 17th October.

To those who have been a part of this special event for the scouts over the years, I commend you now if you haven't been before. That without you, JOTA for scouts just wouldn't exist. You've introduced many boys and girls into your hobby with a sense of interest and understanding (to some small degree) and let's not forget a bit of fun.

JOTA opens up the possibilities for those young scout and guide members to take an interest in amateur radio and become potential future members for amateur radio clubs.

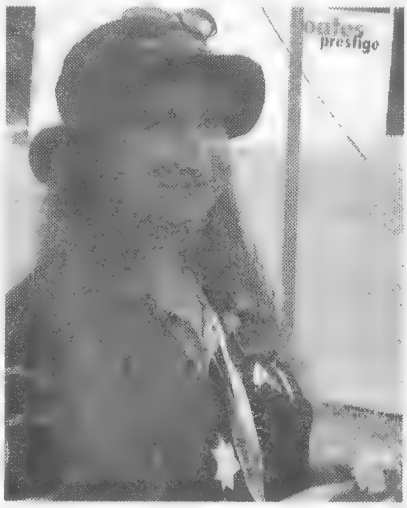
I have been on the sidelines for years now picking up little things from my husband Sam, VK5KSA. I don't have a licence yet but plan to start slow with the foundation licence once it arrives. Both Sam and I are active members for the Scout Radio Activities Group (SRAG). I am just as enthusiastic as most of you are to increase your club members.

Why you ask? I enjoy JOTA every year and seeing the scouts interest and enjoyment at this event. I would like to harness those who are interested and take them to the next level by bringing Amateur Radio and Electronics to them with the group I have created within the scout movement called 'RIG' (Radio Interest Group for Youth). This interest from the scouts was also evident at the Australian Jamboree January 2004 in the Adelaide Hills. Thanks again to those that helped, both local and interstate amateurs who came across to the Jamboree. The JOTA site activity of which I was in charge ran successfully with many youth interested in amateur radio across Australia. So you see why I am doing what I am doing.

What I am asking here is that our Scout Radio Activities Group and the Radio Interest Group for Youth, would like to make this year one of the best JOTA's for SA and really show those scouts the various aspects and equipment used in Amateur Radio today and in the past. We need amateur operators and / or clubs to help out at various sites in SA.

Our two main stations are Glenelg and Woodhouse. Glenelg Station is at the Scout Adventurous Activities HQ (previously known as Glenelg Scout Hall) on Anderson Ave, Glenelg North next to the Baseball fields. Woodhouse JOTA Shack is located inside Woodhouse Activity Centre, Spring Gully Rd, Piccadilly. Last year we had close to 300 scouts at Glenelg over the entire event and near 200 scouts at Woodhouse.

If you have a special or interesting radio set up past or present equipment and would like to demonstrate this to some interested scouts please contact me as soon as possible so I can place you at which ever location you want (Glenelg or Woodhouse). If you still would like to help out but at a different location I am happy to pass on your name and number to another station in the metro area.



Did you know that SA has one of the highest youth attendances of all the States in Australia? That's why I am calling for your assistance this year, because I'd like to improve our numbers with youth and really show scouts what is out there in amateur radio. It is also a great opportunity to promote the upcoming foundation licence. I already have a few interested youth waiting for this. In turn expose your clubs to those youth members to further their interest and for your clubs to potentially increase your clubs members.

So if you know a mate in your club is operating at a JOTA site why not go along, see the buzz from the scouts and get involved this year. You'll never know you might have a little fun too.

Thanks for listening I look forward to hearing from you.

73

Lea Adcock

(see also inside back cover)

SA Scouts enjoy activities during JOTA 2003

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South East Radio Group Convention

Home Brew Competition

John Drew VK5DJ

Each year on the Queen's Birthday Long Weekend the South East Radio Group holds its annual convention. The home brew competition is part of the tradition.

Thanks to an anonymous donor there are excellent prizes to be had and each year the crowd sees a wide range of interesting projects on display. The key purpose of the competition is to encourage people to build their own amateur radio equipment and over the years we have seen a huge range of projects from complete SSB transceivers to simple LED torches.

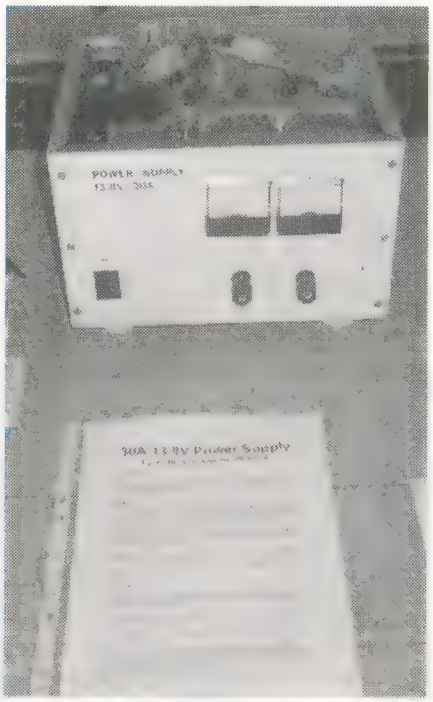
In recent years the documentation has become more sophisticated with circuit diagrams, construction notes and theory of operation provided. However presentation is only a small part of the judging. Innovation, usefulness, quality of construction including soldering, layout, attention to detail and good practice are all criteria for the judging panel.

This year there were nine entries and all had merit. There were three categories – Novice, Experienced and Expert, the aim being to encourage new and old amateurs to submit entries.

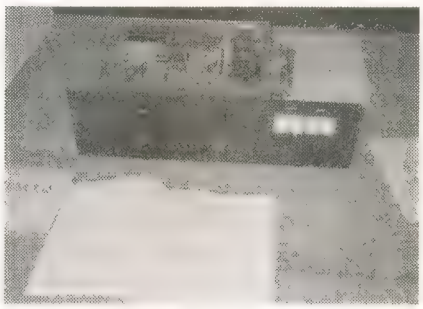
The winner of the Expert section was Bryan VK3YNG who showed a 2 metre Sniffer and 2 metre mini fox including a configuration programmer. This was an outstanding example of modern practice in miniaturisation and hand soldering of surface mount components. The Mini foxes were used in some of the fox hunts held on the day. Bryan was awarded a bench drill for his work.

Bob VK3ZL submitted a high power 1.8 MHz amplifier using 2 of 4CX250W triode connected pentodes to more readily match the 100 W transceivers of today. The amplifier comfortably meets the 400 watt output without stressing

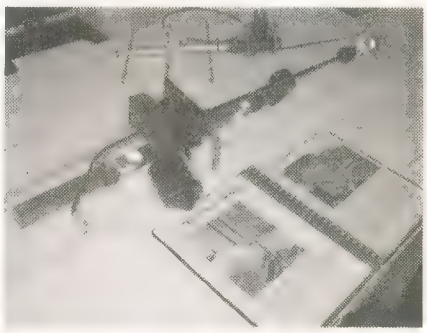
Alan Nankivell VK5ZLT holds his test jig for 2 m, 5/8 wave collinear antennas



Peter Cockburn's (VK5TZX) 30 A Power Supply



The VK3ZL 160 metre high power linear



Mobile antenna rotator by Wayne Kilpatrick VK5ZX

Bryan Ackerley VK3YNG shows his 2 metre mini fox transmitter

components. A feature of Bob's work was the considerations for safety and good RF practice.

Alan VK5ZLT showed his experimental jig for producing VHF centre fed stacked collinears. Alan used the jig to tune the new antenna for the Bordertown repeater that is working so well.

Mark VK5AVQ showed his $5 dummy load kit. A simple kit and a useful one, Mark graphed the load's response and showed good 100 watt capacity up to 2 metre. The judges were impressed with the value and documentation of this project.

Ron VK3AFW contributed a DC Breakout Box for the distribution and monitoring of battery powered portable equipment. A very useful device for all those who go mobile with a range of transceivers and equipment.

John VK5DJ showed his new repeater controller. With provision for linking or as a gateway the controller was well documented and neatly presented on its new commercially produced PCB.

Peter VK5TZX displayed a 13.8V 30A regulated power supply. The design was very well laid out with good access to parts. Heavy duty components were used and attention was paid to heat sinking. A break out box was part of the package.

Simon VK5VST showed a 5/8 portable antenna system for 21 MHz. He used broadcast ganged capacitors, a tapped coil, PVC tubing and a squid pole to get his antenna up 35 feet with radials.

Wayne VK5ZX displayed a portable or fox hunting antenna rotator for attachment to a bull bar at the front of a vehicle. The project featured clever use of a windscreen wiper motor and a speed controller to ensure a variable speed action. The rotator was very nicely made with a quick release facility to enable fast antenna changes.

All participants received a prize on this occasion and the judges commented positively on the quality of the projects during the presentations at the end of the day.

The SERG again thank the anonymous donor for his generosity in sponsoring this event.

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The Gulag files

Richard Sawday VK5ZLR

I was driving around in the little orange Datsun when I saw an auction sign, stopped and had a squiz. Mountains of junk, but one small box containing three radios with matching power supplies caught my eye. Left an absentee bid and promptly forgot about it.

Rang up later on the off chance. You owe us $30 she says. So I duly picked up the spoils of a successful bid.

Took the booty home and plugged it in. The lights came on, all three units looked good, making healthy beeping noises. The beeping noises didn't stop, they just kept beeping. They would beep, the lights come on, and that was it. No Tx, No Rx. Just beeping.

Pulled one unit apart. The beeping must be in the selcall alert, it thinks it's had a call, I decided. Stripped it down, power off, boards out, jumpers disconnected, jumpers connected, boards in, power up. More beeping. Nil Tx, nil Rx. Obviously a faulty unit. Do the same on another one. More beeping. They are all the same.

Log onto the Internet. Nothing on these units, something on similar units, maybe it will help. Download megabytes of tripe. No use. Toss it.

Went to that website, deep in the Russian steppe, east of the Dnieper. *The Gulag*. More information, there is a "C" program to create a binary file, to load into the EPROM, but not for this model.

More days pass, more claret, then another attack on the recalcitrant radios. Removed the EPROM sub-board. More beeping, no change. Why is the EPROM there if it doesn't change anything? What's in the EPROM? It's soldered onto the sub-board. How to tell? Unsolder all its little legs from the sub-board, keeping it cool and intact. How did we manage before vacuum desolder pumps? Put the EPROM in the programmer, read it. Blank. It can't be blank or the radio wouldn't work at all, would it? I don't know. Must have cooked the EPROM desoldering it. Repeat the process on a second unit. Blank too.

After several glasses of lateral thinking, write a test file to the EPROM. Writes OK, what's more, it reads back OK.

Ergo:- the EPROM was really blank and not cooked on desoldering. Some turkey has erased the EPROMs on these radios, which wouldn't be a problem if there was something to load back into the EPROM. There isn't.

No indication as to what band these units operate on. Weird numbers on the PA transistors. Plugged the HP8640A sig gen into the antenna socket, plugged the spectrum analyser into the Rx board input, and quickly wound the knob on the 8640 around until there was a nice hump on the screen. VHF Lo-band. Harmonic filters are a dead give-away.

Back to the Gulag, download the C program. Run it. It's for VHF Hi-band unit. No good. Don't worry, put 70 MHz into the program, let's see what happens, spit out a binary file, burn the EPROM. Install. Bullseye! No beeping, channel number display – OK, looks good.

Tweak the VCO, peak the PA and 30 watt is good, shame it's 300 kHz off freq. Rx is off, Tx is off, all by differing amounts. Some EPROMs work sometimes, some don't. Everything is screwed. Back to the Gulag and cask.

Sort out the crook EPROMs, fling them over the back fence, they can go to hell.

Much misinformation on the Internet, many individuals anxious to display their ignorance. Write the Hex down, write the Binary down, burn an EPROM, record the frequency. Again and again, a pattern comes out, the bytes, the bits, sum of odds and evens; it all comes together, pages and pages of ones and zeros. I know the mutipliers now. I know which bytes are which. I can program this radio. I've been to the Gulag.

ar

Over to you

Out Question Banks?

Richard Murnane, in "Over to You" June 2004 brings up a couple of interesting points.

Memory is a very important talent for people doing examinations. People with a good memory have always had an advantage over those with poor memory. However, if W6NBC can, in 360 minutes prepare his students to memorise 373, 384 or 784 multi-choice questions (depending on the USA exam level chosen) and for them to be able to gain an 85% pass rate, then either he is a genius or his students have phenomenal memories or both. These questions do not have the correct answer indicated.

There is no known perfect in method of running courses or exams. Basically there are three methods in use in the Amateur field.

In Britain they produce textbooks which provide the information which you need to learn to know how to answer the questions in the exams.

In the USA, South Africa, Canada and New Zealand the question banks are published so you know all the questions to be asked.

In Australia neither of these is fully done.

The Regulation questions are published. There are textbooks for the radio theory, but none have been prepared by a person with access to the question banks. Much needed information is omitted The only official guide is a syllabus which can be (and often is) interpreted very widely. The questions used in our exams urgently require revising, eg. What is the relevance to an amateur operator of questions such as :- 'What is the meaning of the prefix "tera"?' or 'Eddy currents and hysteresis losses in iron core transformers decrease with frequency' or 'The intercarrier sound IF in an Australian TV set is 5.5 MHz' etc. etc.

I have seen students badly discouraged by questions such as these. In several decades of life I have studied for many qualifications. In many cases a comprehensive text-hook has been available. Some teachers have also given notes as part of the course. This is fairly normal.

I believe that our students for amateur radio qualifications work under a distinct disadvantage compared with those in many other countries. When I take students for a course I know that I cannot definitely say, "You have covered all the information you need to know." If we had either comprehensive text-hooks or the question banks published it would be possible to say just that. Question banks can be tidied up and published (or modified) much quicker than preparing new textbooks. Books also need to be changed as the question banks are altered. Question banks only need to be republished on the Internet for the system to be brought up-to-date.

There is a hope, in the light of these things, that the new Foundation Course will be fully and properly documented before presentation. My fervent plea is that either a comprehensive textbook or a revised question bank for the other courses will be published as soon as possible.

P.S. Many of the sample papers presently available contain questions, which are not in the current banks, and this sometimes leads to unnecessary brain clutter. I cannot fully appreciate those who are against publishing the official question banks. There are current and older books (still around) containing hundreds of "test" questions. Many of these questions are not the same as those, which will be encountered in exams. Students, who use, these books spend much time uselessly learning irrelevant facts. This makes their quest unnecessarily difficult. One of these current books contains over 50% more questions than the relevant official question bank for the same exam. We publish and sell some of these and we still won't publish the official banks!

My desire is not to make it easier for students but to make it fairer, preferably soon.

73, Neil Trainor VK3IJ

To Whom It May Concern

This is to all those who import their radios instead of utilising our own dealers. Have you ever thought what problems will occur if this sort of thing continues?

Problem (1) after importing your radio equipment, during warranty there is a fault, how do you get it fixed? Pay to have the equipment sent back to the States? Pay again to have it returned to you? Where is your saving NOW?

Problem (2) after the warranty has expired who do you think is going to repair any fault that may occur? Not any supplier here. So your only option is a backyarder. I wouldn't want any of my expensive equipment touched by someone unqualified, who got his experience working on CB radios.

Problem (3), which I think, is the most important one. If business drops off to a point that it can no longer support our dealers and suppliers, the dealers will close and the importers will no longer import. What are you going to do when you want to buy a replacement microphone or antenna if there are no longer any dealers left?

So before you place that order in the states, ask yourself is it really worth it? It maybe a small benefit now but with much bigger ramifications latter.

Rob Owen VK3EA

Views expressed in the 'Over to you' column are those of the authors, and do not necessarily reflect the policies of the Wireless Institute of Australia.

Send contributions to:
The Editor, Amateur Radio Magazine, 34 Hawker Crescent, Elizabeth East SA 5112 or email: edarmag@chariot.net.au

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

We regret to have to announce the loss of a very dedicated club member and friend. Alby Wood VK5TAW died suddenly on August 4th. Alby had not had his amateur licence for many years but he served the club as Secretary for most of those years. He will be sorely missed by us all. Our sympathy goes out to his family.

One of the last social occasions attended by Alby and his wife Carmen was the Mid-year Dinner. They were part of the fifty plus members and partners who braved the cold that night. But all thoroughly enjoyed the company and friendship of the evening.

The other activity in which a number of AHARS members participated was the communication for the Coopers Pale Ale Rally in the Mount Crawford area of the Adelaide Hills. This year it was cold and definitely wet under foot but it was not bitterly cold, as it had been the previous year. It is great the way amateurs answer the call of WICEN to assist in events like this. Many travel quite long distances and have to be in attendance for many hours but all of them do willingly it as part of their hobby.

Some of the happy diners at the AHARS Mid-year Dinner

The club meetings will resume on the 3rd Thursday of each month at Blackwood High School. The meetings open at 7.30 with the speaker first. Everyone is welcome to enjoy an interesting evening.

Wireless Institute of Australia

Central Region

Technical Symposium

Saturday 2nd October 2004

Heights School, Brunel Drive Modbury Heights SA 5092

Program

8 - 9	Check in and register
9 - 10.30	Rex Moncur VK7MO ***Digital enhancement of VHF signals***
10.30 - 11.00	Morning Tea.
11.00 - 12.30	Doug McArthur VK3UM ***EME techniques.***
12.30 - 13.30	Lunch provided.
13.30 - 15.00	Joe Kasser VK5WU and G3ZCZ ***Computers for Amateur Radio***
15.00 - 15.30	Afternoon Tea
15.30– 17.00	David Giles VK5DG ***Amateur Satellites, they are only repeaters***

Cost

$25 including lunch and refreshments.

$20 for Concession Holders.

Further information from:

WIA Box 1234 Adelaide 5001

Rex Moncur VK7MO

Winner of the Ron Wilkinson Achievement Award. Rex commenced work as an Engineer with the Bureau of Meteorology and became Director of the Antarctic Division in Hobart. Rex has come to prominence in the VHF/UHF field and been almost solely responsible for the promotion of the new digital modes. Rex has spent considerable time in investigating the pros and cons for these modes and exploring them to their maximum potential. Read more about Rex in Amateur Radio May 2004.

Doug McArthur VK3UM

Multiple Winner of the Ron Wilkinson Achievement Award. Doug was first licenced as VK5KK in 1957. Doug has worked in the radio field ever since. As VK8KK Doug worked at Radio Australia in Darwin, then as VK3UM in Victoria. Doug identified and explored Aircraft Enhancement modes on VHF, and with over 20 years experience is a leading EME operator. Read more about Doug detecting the Mars Global Surveyor in Amateur Radio June 2004.

Joe Kasser VK5WU and G3ZCZ

Joe was born in England and spent about 30 years based in the United States. He is a prolific writer, researcher and lecturer in systems engineering.

He was closely involved with AMSAT for more than 15 years, and has wide interests in Amateur Radio. Joe has received many awards during his long career. He is currently Associate Research Professor at the Systems Engineering and Evaluation Centre at the Mawson Lakes Campus of UniSA.

David Giles VK5DG

David lives in the south east of South Australia. He was first licenced in 1986 and has had an interest in satellites for the last 8 years. David worked all continents, and 65 countries on AO40. He is employed as a shift electrician at a local timber mill and has just completed Bachelor of Technology through Deacon University, by distance education.

Amateur radio contact for directions October 2nd via Houghton repeater VK5RHO 146.850 or telephone Trevor Quick 8380 5542 or 0421 918 099

ALARA

Christine Taylor VK5CTY

ALARA Contest

Hopefully conditions were better for us all this year. There should be lots of logs going to Marilyn VK3DMS for checking. Maybe there is someone who worked hard enough to qualify for the Florence McKenzie Trophy again. There are not so many people who use CW on the bands these days, but it seem as if those who are there enjoy the challenge. Let us hope there were enough enthusiasts to fill a log.

It was encouraging to have an OM break into the Monday Night Net recently to ask the date of the ALARA Contest. He was given the information gladly. We always encourage OMs to participate. We feel this Contest is different, as we are happy to have a chat and a real contact with everyone.

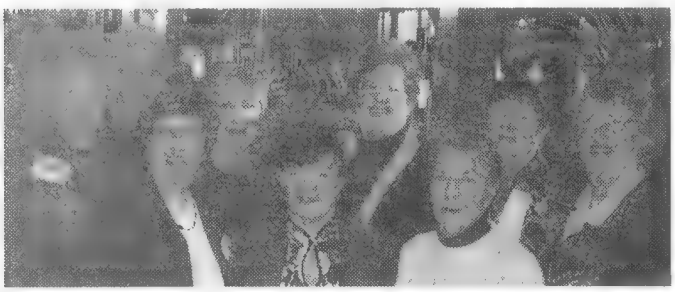
Do remember to send in those logs before the end of October.

ALARA Birthday

If my experience is similar to that of others, there was not much activity on the air for the Birthday Net on July 24th, however, in VK5 there was some activity on 25th. That was the day of the Birthday Luncheon. This year it was attended by 9 YLs and 8 OMs.

Mostly it was the familiar faces who got together but it was very pleasing to have Sue VK5AYL and her OM Michael (who used to be an amateur but has let his licence lapse, I think). Sue brought along a newspaper cutting that showed a very young man with an elaborate antenna designed for tracking satellites. This would have been made back in the very early days of satellite activity. Sue, herself was involved in the early days of ATV. Perhaps we can encourage both of them to become more active now.

Myrna VK5YW and Janet VK5NEI represented the earlier ALARA members while Shirley VK5JSH is a relatively recent amateur and Jenny, a very new ALARA member. The in-between members were represented by Meg VK5YG, Christine VK5CTY, Tina VK5TMC, Sue VK5AYL and our State Rep, Jean VK5TSX. We were reminded that this year we were meeting on the actual anniversary of the foundation date for ALARA, 29 years ago.



The Birthday luncheon with
L-R back row: Meg VK5YG, Jean VK5TSX, Sue VK5AYL, Tina VK5TMC, Shirley VK5JSH, and Christine VK5CTY
L-R in front: Myrna VK5YW, Jenny Zeitz, and Janet VK5NEI

A very new YL group

The Scandinavian Young Ladies Radio Amateurs came into being as an association earlier this year. None of the separate countries of Scandinavia have enough YL amateurs to form a viable YL group but together they can certainly form one. Geographically and historically this group of countries share many characteristics, not least of which is their climate.

The club will operate from Denmark, Finland, Iceland, Norway and Sweden.

A photo in the DL-YL Informationen has ten YL in it including several faces that are familiar to us in VK/ZL-lands. Hopefully we will come to meet the others as well either on air or face-to-face. Welcome Ladies!.

R.I.G. And the gift of radio equipment

RIG is a sub-group of the SA Scout Radio section established to encourage young people to be interested in amateur radio as a hobby and as part of their Scout activities. It is led by Leanne Adcock who became involved through her OM and through the station run at the World Scout Jamboree held in SA early this year, as has been mentioned before. We wish it very well and hope to hear a club station run by these young people operating in the ALARA Contest, if not this year, certainly by next year.

Our donation of equipment for this group has come about only through the generous gift from Vic VK2EVK. He wished it to be used for the sort of purpose this group appears to be fostering. All the materiel necessary to establish an operational radio station has now arrived in South Australia and is in the process of installation. Next month we hope to bring you a photo of it in use.

Time to start planning for the next ALARAMEET

Next year on Saturday 10th September we will be meeting in Mildura for the start of another weekend of friendship and chatter. Marilyn VK3DMS has given us an itinerary to help us plan to be there.

If you are intending to travel North during the colder months down South, why not add Mildura to the end of your trip? The weather there is nearly always bright and sunny – I believe Mildura actually has more days of sunshine than the Sunshine Coast does but we won't tell the VK4s about that!

Two full days of activities are arranged with plenty of time for chats as well with an optional tour for those who can stay over the Monday. If you come early or stay later than just for the weekend there are many more interesting places to see and things to do around the inland city.

OMs and Harmonics are invited as well, of course, and will have as much fun as the YLs. Even if you are not members of ALARA all YLs are welcome to come and bring their OMs with them. Once you have enjoyed one ALARAMEET you will become addicted and want to come along to them all. Try it and see.

Details are available in the July 2004 Newsletter and on the ALARA website at www.alara.org.au or at the special Internet address http://users.ncable.com.au/gsyme/AlaraMeet/

Robin Harwood VK7RH

SPAM

One of the constant drawbacks I have is SPAM. Yes unwanted emails from anonymous individuals or questionable enterprises with offers that are too good to be true.

Some of these spam emails turn out to be scams and try to unwittingly get the individual to go to fake sites to "verify" your account or commercially sensitive information. I am aware of several elderly individuals who were personally duped into going to what appeared to be an official bank site on the web, which in reality was a spoof site. They unwittingly gave away their personal information and found out that one of their accounts was completely cleaned out. Fortunately the amounts were small but they had no way of recouping their money. However they did check with their bank and were quickly warned to change their personal information before any further damage could be done. Official financial institutions do not generally advise their clients by email to verify their sensitive personal information on the web.

These spoof sites are deliberately made to look very similar to the official sites and mimic their address yet with some letters or addresses in different order. Not surprisingly most of these fake sites are criminal enterprises and are hard to trace, often in third world nations. So be careful what you do share and with whom on the Web. Have you got a good firewall to prevent unauthorised persons or groups reading your information whilst you are online?

It is also advisable to have several email addresses for specific purposes and keep some private. One mistake I made was to put my main email address in a tagline and this was apparently mined by one of these Spam merchants. Once this has happened it is almost impossible to stop them from flooding your inbox. For instance on an average day I get 150 emails, under half of them legitimate emails. I do use antispam measures based on content and email addresses and although this works, it does have a serious drawback that it has blocked legitimate emails. Therefore you should always check your junk mail for any hidden legitimate emails.

Many shortwave stations do have email addresses and it was often quicker and cheaper to use the Internet but because of Spam flooding their inboxes, I now rarely get a reply as I did, just a few years ago. A letter still works although it takes longer and is much more expensive than an email.

Many shortwave stations do have email addresses and it was often quicker and cheaper to use the Internet but because of Spam flooding their inboxes, I now rarely get a reply.... A letter still works although it takes longer and much more expensive than an email.

The Voice of America

The Voice of America has recently been in news, following the recent demotion of their News Director and the imminent closure of several overseas bureaus in Europe and Asia. A petition was hastily organised and sent to the US Congress. Apparently the staff also were far from complimentary of the semi-clandestine stations, Radio Sawa, Radio Farda and Al-Hurrah TV. The parent organisation of the VOA, the International Broadcasting Bureau (IBB) also recently announced that Radio Liberty, presently based in the city of Prague, the Czech Republic, is going to relocated further outside of the city centre because of ongoing security concerns.

DRM

The July issue of "AR" had a very interesting report on DRM reception by Brian, VK3BCZ. As he pointed out, this "new" mode does indeed have drawbacks in that you will definitely need a wide IF stage of at least 12.5 kHz and minimal receiver noise to be effective. At this stage, manufacturers are still reluctant to produce models in commercial quantities to make DRM viable. At present, most of the test DRM broadcasts are based either in Europe or via Sackville, Canada. Very few are beamed to this region. Although DRM is there, I have yet to personally judge the difference.

Digital TV

Digital Television has been here in northern Tasmania for about 12 months and in late July, the two existing commercial stations commenced broadcasting and were joined by a digital only broadcaster, relaying channel 10 in Melbourne. Digital Pictures are indeed better than the analogue but alas the programming is still lousy!

I do have an email address for any comments or suggestion you may have. It is vk7rh@wia.org.au. Good listening and 73.

RADIO AMATEURS OLD TIMERS CLUB OF SA

The* ANNUAL LUNCHEON *will be held on* Thursday 21 October 2004 *at 12 noon for 12 30pm lunch at Marion Hotel, Marion Road, Mitchell Park, Adelaide.

RSVP Ray Deane VK5RK Phone 08 8271 5401

Over to you

Questionable questions

Not only did Ian Godsil, VK3JS, raise a few questions (Contests, AR July 2004); he also raised a few eyebrows. Ian, quite rightly, criticised the Central Highlands Amateur Radio Club of Tasmania (CHARCT) for the length of time it took to produce the results of the 2003 Wadda Cup Contest. CHARCT has taken this criticism on board and has sincerely apologised to the contest participants and amateurs in general. CHARCT is very aware of the responsibility that comes with the sponsorship of a contest and whilst problems may and do occur, the real test is how changes are made to avoid similar problems in the future.

As to the idea that the winner of the contest becomes the manager for the following year, Ian suggested this was a mistake and considering the outcome for 2003, CHARCT agrees. The management of the Wadda Cup Contest has changed; in order to overcome a repeat of the problem experienced in 2003. This really should have been the end of the questions and comments made on assumptions. However, there was more.

Ian wrongly assumed that the reason the results were not published in a timely manner was due to the passing of the management of the contest. The reason has been stated in the official CHARCT 2003 Wadda Cup Contest results and was due to personal problems and not the ability of the contest manager.

I feel that Ian's comment "she'll be right, mate" was over stepping the mark. If this was directed at amateur operators in general, Ian needs to remember that our hobby is a very personal affair. Some people do not like contests and many contesters are choosy towards the type of contest that they enter. They should not be admonished for that. If this comment was directed at CHARCT, then maybe Ian should find out a few facts before making such an outlandish claim.

How far do we go trying to be uniquely Australian? Where on earth did this question spring? This seems to me conjecture based on nothing. CHARCT has endeavoured to make the Wadda Cup Contest as interesting as possible and foster changes to the contest rules to reflect what contesters want. Some readers of Ian's column have construed "uniquely Australian" as a very derogative comment, considering the context of its use. I would prefer to read encouraging answers rather than questionable questions about contesting from the Federal Contests Coordinator.

I have taken over the management of the Wadda Cup Contest. If Ian has any comment to make on any future event, I suggest that he make contact with me and arm himself with facts before making comments that may be considered uninformed if not a little offensive.

As to the question "should anyone take part in a contest that they are managing", I say most definitely yes. I am yet to hear a valid argument as to why not. There may be those that would suggest that a manager should not take part in a contest to ensure that there is no fiddling. I feel that this is very cynical and does not reflect the spirit of amateur radio. So, Ian, do have a go. I will always have a go at any contest that I am managing.

Vincent Henderson, VK7VH
2/6 Lissadell Court
Newtown 7008
Tasmania

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- RG8/U - RF400 Belden 7810 Low Loss Sweep Tested to 6000MHz @ $6.30 per metre

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Ian Godsil VK3JS

Contest Calendar September - November, 2004

4/5	Sep	All Asian DX	(SSB)
11/12	Sep	Worked All Europe DX Contest	(SSB)
25/26	Sep	CQ/RJ WW RTTY DX Contest	(RTTY)
2/3	Oct	Oceania DX Contest	(SSB)
2	Oct	Psk 31 Rumble	
3	Oct	RSGB 21/28 MHz Contest	SSB)
9/10	Oct	Oceania DX Contest	(CW)
16/17	Oct	JARTS WW RTTY Contest	
16/17	Oct	Worked All Germany Contest	(CW/SSB)
17	Oct	Asia-Pacific Sprint Contest	(CW)
17	Oct	RSGB 21/28 MHz Contest	(CW)
30/31	Oct	CQ WW DX Contest	
7	Nov	High Speed Club CW Contest	
13/14	Nov	Worked All Europe RTTY	
13/14	Nov	Japan Intl. DX Contest	(SSB)
13/14	Nov	OK/OM DX Contest	(CW)
19	Nov	YO Intl. PSK31 Contest	
20/21	Nov	RSGB 160 Metre Contest	(CW)
20/21	Nov	RNARS CW Activity Contest	
27/28	Nov	CQ WW DX Contest	CW)

2004 VK/ Trans-Tasman 160 Metre Contest

Concise Results

Winner, VK/Trans-Tasman Trophy	VK3IO Ron Tremayne, Cockatoo 983 points CW
(highest overall score):	(first CW station to win a VK/ trans-Tasman Trophy)

Category 6 - Phone:

Participation factor:

27 ZLs divided by 77 VKs = 0.351.

- All ZLs points for contacts with VKs X 0.351.

Equal 1st:	VK3BF (Multi-operator) - refer Rules 572 Alan Tubb and Victor Punch, Wheeler's Hill VK5AY Bronte Wood, Lyndoch 524
2nd:	VK3EK Robin Ashlin, Bairnsdale 495
3rd:	ZL2CC Mike Mather, Gisborne 408

Category 7 - QRP Phone:

1st:	VK3UBM Michael Borthwick, Hawthorn 35

Category 8 - CW:

Participation factor:

23 ZLs divided by 29 VKs = 0.793.

- All ZLs points for contacts with VKs X 0.793.

1st:	VK3IO Ron Tremayne, Cockatoo 983
2nd:	VK2BPL Paul Linsley, Teralba 588
3rd:	ZL1JG Ron Dent, Auckland 554

Silent Key

Geoff Bower VK2OI

Geoff Bower's daughter Christine M. Laden has informed the WIA that Geoff passed away in July.

Our sympathy is extended to his family and friends

VK5UE Editor

The Wadda Cup heads to VK5-Land

Vince Henderson, VK7VH
2004 Wadda Cup Contest Manager, email - vk7vh@hotmail.com

Firstly, The Central Highlands Amateur Radio Club of Tasmania (CHARCT) makes a sincere apology to all entrants of the 2003 80m dash for the Wadda Cup, and amateurs in general, for the length of time it has taken for this article to be published.

While the idea of the contest winner to operate as the contest manager for the following year had some merit and was certainly different, there were some problems. The reasons why there were problems are of a personal nature and unavoidable. The contest management system just needs to be changed to ensure the smooth running of the entire event and avoid any problems that might hinder the contest in the future.

I undertook the position of contest manager for the very first event. I am happy to pick up the baton for the 2004 event. I will continue in this role. So for now, the buck stops with me. If you have any suggestion regarding the future running of the Wadda Cup Contest, I would welcome your comments. The Wadda Cup Contest is alive and back on track. Please have a go at the 2004 event. I am sure you will have a great time.

The Wadda Cup Contest is alive and back on track. Please have a go at the 2004 event. I am sure you will have a great time.

CHARCT has changed the contest rules to ensure that the actual management of the contest will remain with CHARCT. The contest winner will still have a role in the contest for the following year. This will be limited to on air activity and will be optional. In keeping with CHARCT's aim to make the 80m Dash for the Wadda Cup interesting, some subtle changes have been made. The Wadda Cup Contest will always have an evolving nature, reflecting what contesters want from this type of contest, whilst maintaining a platform that will encourage first time contesters.

The 2003 80m Dash for the Wadda Cup was won by VK5SR. This is the club station of the South East Radio Group, based in Mt. Gambier. The club station operator was Kevin Johnston (VK5KJ) using a Kenwood TS930 into a dipole at 30 metre. Kevin had a great signal, which I am sure contributed to his fine score, 7 points clear of his nearest rivals. Congratulations, Kevin, for achieving such an outstanding result.

Second place was a tie between John Laan (VK3MGZ) and Paul Butler (VK2BPL). Paul is an ex PNG amateur, P29PL, and the Wadda Cup was the first contest he has entered in Australia. Well done Paul. You will see from the results that the top scores were very close. Even third place was a four-way tie.

Although there was only one SWL log entered, Ben Henderson's score of 26 was very respectable. What is remarkable about this entry from Ben is that he is just 7 years of age. Yes, you guessed correctly, Ben is the son of the writer. However, Ben did it all on his own. Hopefully, the 2004 event will see a few more SWL entries. I am sure Ben will try and defend his crown and some competition will keep him on his toes. If you are a SWL and have never entered a contest before, the Wadda Cup is an ideal first time contest. Why not give it a go.

The 2004 Wadda Cup Contest is set down for 23 October this year. Look for the full article, including the rules, in the September 2004 issue of Amateur Radio Magazine. Alternatively, just go to the CHARCT web site www.vk2ce.com/vk7cht. I encourage you to have a go at this short, fun contest. The Wadda Cup (also known as "The Old Mug") is a great looking trophy and the winner gets to hang on to it for a year. I am reliably told that the Cup can be put to good use as a drinking vessel. Evidently, it will hold a pint of your favourite ale.

If you need any further information about the Wadda Cup Contest, CHARCT hold an on air quiz every Thursday evening at 8.30pm local time. Tune around 3.585 MHz and give them a shout. You would be most welcome to join in the quiz, which is a lot of fun and usually lasts for 30 – 40 minutes. Alternatively, the Tasmanian Devil Net is on the same evening (same frequency), ably run by Dale (VK3YR), at 8.00pm. Information is also available on this net.

Rumour File

Heard a rumour recently that after some eight or nine years, Alek Petkovic VK6APK, may stand down as Manager of the RD Contest. A possible replacement may be Chris VK4AA. More details later.

The 2003 Wadda Cup Contest results

Callsign	Score
VK5SR	29 *
VK3MGZ	22 **
VK2BPL	22 **
VK3EK	20 ***
VK2LCD	20 ***
VK7JGD	20 ***
VK7KZ	20 ***
VK4KSS	19
VK7VH	19
VK3MSW	18
VK3GER	16
VK3JSS	16
VK3FH	15
VK3KMB	15
VK5GX	14
VK4MIA	12
VK3MMM	12
VK2JHN	7
VK3JKY/7	6

Ben Henderson 26 (SWL certificate)
* = First place and trophy winner
** = Second place certificate
*** = Third place certificate

Congratulations to everyone that participated in the 2003 event. Your continued support will ensure that the Wadda Cup Contest will continue to grow from strength to strength.

Happy contesting

2004 Wadda Cup Contest

The Central Highlands Amateur Radio Club of Tasmania (CHARCT) will hold the 2004 80m Dash for the Wadda Cup on 23 October 2004.

This is the third running of the Wadda Cup Contest. Participants from previous years will know that the rules have evolved to suit notable change requests received from contest entrants. This year is no different and there are a few major changes and an additional bonus for the winner.

The contest date and time have changed. This is due to the large number of contests that are held from May to September 2004. October is light on for contests and this is one of the reasons why the contest has been moved to a later date. The other significant change is that the sequential number exchange is not required. The new system requires you to give your callsign and your Christian name. Your name is the contest exchange. This should encourage more people to participate in the call back as no one will know the score of the other participants until the call back has been completed..

In past years, the winner of the contest would become the contest manager for the following year. As 2003 proved, this could lead to problems. The contest management will now remain with CHARCT in Tasmania. The winner will become the "on air contest coordinator" for the following year. All that is required of the previous winner is to operate as VK7CHT/P and conduct the call back at the end of the contest. All on air score recording, receiving of logs, rule changes, articles and general contest management will be done by CHARCT.

CHARCT has decided that the contest winner will receive a replica Wadda Cup. The winner will retain the replica. The winner will still retain the original Wadda Cup, for 12 months. Previous winners of the Wadda Cup will also be sent a replica, after the 2004 event.

Contest bonus

The contest also offers amateurs the opportunity of accumulating contacts for two Tasmanian awards. The CHARCT Tassie Trout Award is available to any amateur that makes contact with 14 CHARCT members. Full details, including the current membership list, are available on the club's website www.vk2ce.com/vk7cht

Also, the Tasmanian Division of the WIA has the Tasmanian Devil Award. Contact with 50 VK7 amateurs is the only requirement on HF. More details are available on the VK7 division website www.tased.edu.au/tasonline/vk7wia

Contest aims

- Encourage on air activity in a short, friendly contest.
- Provide amateurs with the opportunity of accumulating contacts for the Tassie Trout Award and the Tasmanian Devil Award.
- Encourage entry by first time contesters.
- Promote on air activity of VK7 amateurs.
- Encourage SWL participation, especially SWL's that have not entered a contest.

The complete Wadda Cup rules are as follows -

Contest date and time

The contest will be held on Saturday 23 October 2004. The contest will be 60 minutes duration. The start time is 1000 UTC (8.00pm EST, 9.00pm Tasmania) until 1100 UTC (9.00pm EST, 10.00pm Tasmania).

Pre-contest announcements

The contest on air coordinator will be the club station VK5SR. Kevin Johnston (VK5KJ), the winner of the 2003 event, will operate as VK7CHT/5 (CHARCT club callsign) during the contest. Contact with VK7CHT/5 will earn 2 bonus points. VK7CHT/5 will not be eligible for the Wadda Cup or any contest award certificates.

All contestants are asked to listen on 3.585 MHz (+/-), 15 minutes prior to the start of the contest. CHARCT President Bob Geeves, VK7KZ, will give a short address and officially launch the 2004 80m Dash for the Wadda Cup. VK7CHT/5 will give an UTC time check, on this frequency, 2 minutes before the start time.

General rules

1. The contest is open to all VK amateurs and SWL's.
2. A station may only be worked once during the contest.
3. The exchange will consist of your call sign and your Christian name. Sequential numbers DO NOT need to be exchanged. RS exchange is not required.
4. The contest is phone only, using LSB on the 80m band. Frequencies to be used are from 3.540 MHz to 3.625 MHz.
5. Maximum power is 100 watt.
6. Entry categories -

   Category a) Single operator entries only. No multi-operator entries are allowed.

   Category b) Short wave listeners (SWL).
7. The winner of the 2004 Wadda Cup will be the on air contest coordinator for the 2005 event. This is not a great chore. The on air manager only needs to operate the CHARCT club callsign (VK7CHT/P) and conduct the contest call back at the end of the contest. If, for any reason, the winner is unable to operate as the on air contest coordinator for the following year, CHARCT will take over the role for that year.

Scoring

Category a)

i. Contact with any VK amateur scores 1 point.

ii. Contact with VK7CHT/5 scores 1 contact point plus 2 bonus points = 3 points.

Category b)

i. All recorded contacts score 1 point

ii. VK7CHT/5 may be recorded more that once, however, the 2 bonus points may only be counted once.

The contact and move rule

1. After calling CQ contest and establishing a contact, the calling station must move their calling frequency by at least 5kHz.
2. A station answering a calling station may make one call on the same frequency and exchange names with another station. The calling station must then move their calling frequency by at least 5kHz.

Example -

VK7VH calls CQ contest on 3.560 MHz. VK7KZ answers the call and exchanges names with VK7VH. When the contact is completed, VK7VH must move frequency by at least 5kHz. VK7KZ may then call CQ contest on 3.560 MHz. VK2CE answers VK7KZ and exchanges names. VK7KZ must move at least 5kHz etc etc.

Logs

1. All participants must keep a separate contest log sheet. Use 3 headings - UTC time, Station worked, Name (Christian name of the station worked).
2. SWLs should record UTC time, the call sign of both stations and the name sent by each station.
3. Retain your log for checking. During the contest call back, the on air contest coordinator will advise you if your log is required to be sent to the contest manager. If, for any reason, you are not able to participate in the call back, you must send your log to the contest manager for inclusion in the contest results.
4. It is a pre-requisite that the contest winner, 2nd place contestant(s), 3rd place contestant(s), as per the call back, and all SWL's must send their log no later than 23 November 2004.

Send postal entries to -
The 2004 Wadda Cup Contest Manager
2/6 Lissadell Court
Newtown
Tasmania 7008
Send e-mail entries to –
Vk7vh@hotmail.com

E-mail entries will be accepted in txt, word 6, excel 6-format or text output from any logging program. Attach the file to the e-mail. Please do not put your log into the body of the e-mail text. Put your call sign 2004 Wadda Cup Log into the subject heading.

Logs must be legible and show the details required in Log rule1 (Log rule 2 for SWL). Attach a summary sheet showing the entrants callsign, name, address and claimed score. If your log is not received by the due date, you may be excluded from the contest results. You will be advised during the call back if your log will be required as a check log.

The winner

All contest participants are asked to listen for VK7CHT/5 on 3.585 MHz (+/-) immediately after the conclusion of the contest. Add up the number of contacts that you made, during the contest, and if you worked VK7CHT/5 add 2 bonus points to your final score. Follow the on air roll call to find out the provisional winner of the Wadda Cup and other contest award certificate winners.

1. The winner will be the entrant with the highest score.
2. Should there be more than one entrant with the highest score, an on air count back will be conducted by the on air contest coordinator. The count back will be based on the number of contacts made during specific time blocks. Although the count back procedure will be decided prior to the contest, details will only be revealed during the count back.
3. The provisional winner, 2nd place contestant(s) and 3rd place contestant(s) will be declared official when logs have been received and checked by the contest manager.
4. The contest manager's decision will be final.

The awards

1. The winner will be awarded the Wadda Cup, suitably engraved, for a period of 12 months. The Wadda Cup is a classic silver cup and has become known as the "Old Mug". The winner will also receive a replica of the Wadda Cup and the first place award certificate.
2. All 2nd place contestant(s) and 3rd place contestant(s) will receive an award certificate.
3. The highest SWL score will receive a special contest award certificate.

Results

When the contest manager has verified all logs, the results will be published on the CHARCT website. Results will also appear in Amateur Radio magazine.

If you need any further information about the Wadda Cup Contest, the Central Highlands Amateur Radio Club of Tasmania (the contest organisers) hold an on air quiz night every Thursday at 8.30pm local time. Tune around 3.585 MHz and give them a shout. You would be most welcome to join in the quiz, which is a lot of fun and usually lasts for 30 – 40 minutes. Alternatively, the Tasmanian Devil Net is on the same evening, ably run by Dale (VK3YR), at 8.00pm. Information is also available on this net.

Whether you are a keen contester or someone that has not tried contesting before, we encourage you to have a go at this year's event. Have fun during the contest and don't forget to join in the roll call at the end of the contest.

Goodluck and happy contesting

Vince Henderson, VK7VH
2004 Wadda Cup Contest Manager

Oceania DX Contest

Please note that due to difficulties with our server, the latest web pages for the Oceania DX Contest have been temporarily moved to:

http://www.nzart.org.nz/nzart/Update/Contests/Oceania/default.htm

Also, remember to book the following dates for the 2004 Oceania DX Contest in your diaries:

PHONE Section: 0800 UTC Saturday 2 October to 0800 UTC Sunday 3 October 2004

CW Section: 0800 UTC Saturday 9 October to 0800 UTC Sunday 10 October 2004

73 Brian Miller ZL1AZE
Chair Oceania DX Contest Committee

Bill Magnusson VK3JT

AMSAT-VK HF net ceases to meet formally

You will notice there are some changes in the "Title-Box" this month resulting from the discontinuation of the long running HF net. After much discussion it has been decided to close the net on HF and use Echolink as our primary means of keeping in touch. This has come about for a number of reasons. Trials have been made over the years of different times and different frequencies for the net. Due to the vagaries of HF propagation from season to season, no permanent time and frequency could be arrived at. It proved necessary to make changes during the year, every year. One of the outcomes of this was that at every change a different group of amateurs would be affected as no time or frequency would be suitable for all parts of Australia for the whole of the year. The Echolink net on the other hand has given us the opportunity to pick a time to suit just about everyone. The 0600 UTC time slot equates to "soon after lunch" for the Perth stations, "late afternoon" for the eastern states and "after dinner" for our New Zealand friends. Echolink also affords the opportunity for overseas stations to take part and this has happened regularly in the short time it has been running. During the past year or so the HF net participation rate has dropped to a low level and the decision to close it was made, albeit reluctantly so that Graham would not have to commit the Sunday evening as well as the afternoon away from his family. To that end he has suggested that the HF group continue as an informal discussion gathering rather than a formal AMSAT-VK net. So - if you feel inclined to come on HF at the usual times each second Sunday evening - please do.

Echo open to users

AO-51 was turned on for general use in FM repeat mode on 30 July 2004. During the trial period of about three weeks the command stations will be watching the power budget and adjusting the UHF transmitter B power as needed for good management of the battery. Initially, the transmitter was running at about 1 W and signals were loud and clear. The TXB transmitter will be on 435.300 MHz, which is also a trial frequency. The original frequency of 435.225 MHz is now in regular use by GO-32, so the alternate is being tested to see if it can be used long term.

Uplink:	145.920 MHz FM voice with 67 Hz PL.
Downlink:	435.300 MHz FM voice.

The downlink transmitter comes on when it hears an uplink signal with a 67 Hz PL tone for about 1 second. It stays on for 10 second after that signal goes away. Note that Echo is still wobbling a great deal and the polarisation sense of the downlink will vary. The control stations will be analysing the WOD for information about how much TX B is on and how the power system is behaving. At the time of writing the digital transponder and the store and forward BBS, are NOT yet open for general use although it is expected that this mode will be tested shortly on a Wednesday "Experimenter's day". Echo was very heavily used in the first few days. It is good amateur practice and common courtesy to let everyone have a chance. Echo will hear you as well as or better than any previous amateur FM repeater satellite. With the downlink transmitter at 1 W you will need a small directional antenna to hear it well. Reports on the AMSAT-BB have been very encouraging from this part of the world with many contacts being reported. A sharp contrast to the usual "circus" over more populated parts of the world where dozens if not scores of stations have been competing for the single channel available. The command team of Jim White, WD0E and Mike Kingery, KE4AZ are to be congratulated on the way ECHO has been "brought on line" with a minimum of fuss to - (so far) - fulfil all design criteria.

Concern regarding the CELESTRAK Keplerian element service

It would be difficult to think of any single thing which could impact on the amateur radio satellite service more than "kep elements" being difficult or impossible to obtain. At present our day to day acquisition of fresh data depends to a great extent on the operation of the CELESTRAK web site managed by Dr Tom Kelso. A recently signed act of US Congress has put a cloud over this service. As things stand at the time of writing, Dr Kelso will be forced to close the CELESTRAK web site on October-1, 2004. It is to be hoped that a way around this situation can be found before that date. It would be extremely difficult if not impossible for any amateur radio organisation to generate accurate Keplerian elements, even for a small group of amateur radio satellites. Those of us who can remember the days before "kep element sets" and BASIC programs written by Tom Clark, James Miller and Karl Meinzer will recall the weekly scribblings as EQXs (Equator Crossings) were read out painstakingly over HF nets. That would not work in today's environment of auto-tracking and auto-Doppler compensation. We'll all be in deep trouble if something is not worked out on this one. Please go to the CELESTRAK site, read the document and - as Dr Kelso has requested - fill in the questionnaire. Keep your fingers crossed and watch the BB.

Amateur radio transponder to fly on the SSETI satellite

On Friday the 30th of July, the Chairman of AMSAT-UK - Professor Sir Martin Sweeting, G3YJO - announced a new amateur transponder project to be launched as part of the European Space Agency SSETI Express satellite. Speaking at the opening of the 2004 AMSAT-UK Colloquium at the University of Surrey in Guildford, he expressed his delight that AMSAT-UK had been able to work with the ESA to provide, at very short notice, an S-band - 2.4 GHz - transmitter. It is intended that the transmitter will be available for use as the downlink of a single-channel FM transponder. The 437 MHz receiver is being provided to ESA by DF2FQ. These frequencies will enable the many amateurs who already have Oscar 40 equipment to use it in an exciting new way. The 2.4 GHz downlink exciter, switched-mode power supply, control interfaces and power amplifier are being developed by Sam Jewell, G4DDK; David Bowman, G0MRF; Jason Flynn, G7OCD; and Charles Suckling, G3WDG, with Graham Shirville, G3VZV, assisting. It is intended that SSETI Express will be launched into a sun synchronous 680-kilometre orbit in April 2005. The controllers are planning to run a competition to see who can download and send in the greatest amount of valid telemetry data from the new satellite in the first month or so of operation. So, dust off your AO-40 gear, connect up your high speed TNC and prepare to join in the fun. Remember it will be a LEO so your dish will need to be auto-tracked if you are going to seriously compete for the prize, which is yet to be announced but described as 'valuable'.

Requirements for higher baud rates

With the advent of AO-51 and its potential for higher baud rates there has been a flurry of questions on this topic on the BB. If your station is already set up to work the 38k4 facility on satellites like UO-36 and MO-46 then it will all work with AO-51 when it switches to high speed mode. So - what are the basic requirements?

The first thing you need to come to terms with is that there is a definite relationship between baud rate and bandwidth. This may sound simplistic but it's not very well understood. 1200 baud packet radio for example can be handled quite easily by piping the data in through the microphone socket and extracting the received data from the loudspeaker socket. Its bandwidth can be handled by the normal audio stages of the average amateur transceiver without any modifications. 2400 baud can just be accommodated, but when it comes to 4800 baud the audio system cannot handle it any longer.

One way out of this is to use FSK (direct frequency shifting of the carrier) instead of AFSK (audio frequency shifting FM by audio tones) which is used in 'normal' packet radio. This approach reduces the required bandwidth a little but the audio stages of our transceivers can still only accommodate it up to 2400 baud and there's little point in making that step. Even using FSK, the audio section of the rig can't handle 9600 baud and beyond.

You need to make a connection to a wider bandwidth area in the set. This is usually done at the discriminator of the receiver and the balanced modulator of the transmitter. In the early days of UO-22, KO-23 etc. we had to do the modifications to our radios in order to work 9600 baud.

Despite manufacturers claims to the contrary, none would do it "out-of-the-box". Nowadays many radios have a digital I/O port that will handle up to 9600 baud. That's all very well up to 9600 baud and lots of stations have used one or the other of these methods to work the digital transponders on satellites from UO-22 onwards.

When UO-36 was launched in April 1999 it opened up a totally new era in amateur radio satellite communication with higher speed down links and the capability of handling the huge files generated by its digital cameras.

It was soon realised that even connection to the discriminator sections of the radio wouldn't provide enough bandwidth due to the limitations of the transceiver's IF stages.

A totally new approach was needed. In essence one requires a dedicated wide-band IF strip feeding into a wide-band decoder. There are several approaches to this problem and after a lot of investigation I chose the SYMEK system. SYMEK is a German company specialising in high speed packet radio systems. Their TNCs will handle baud rates as high as 116k without too much fuss.

The SYMEK "IFD unit" is a small circuit board that fits into your transceiver and takes the signal from an early mixer to feed into the high speed outboard TNC. This board is essentially the wide-band IF strip from one of their dedicated UHF data transceivers. Coupled to a high speed TNC the system is powerful and bulletproof. Mine worked first time and hasn't put a foot wrong.

There are many other ways to go about it including some software and some hardware solutions but judging by the amount of problems surfacing on the BB, I would go down the hardware track every time.

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Contact Graham if you wish to be placed on the mailing list.

AMSAT-Australia Echolink Net

The net meets formally on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join in and take part. Graham VK5AGR acts as net controller. The net starts at 0600 UTC and you can join in by connecting to the AMSAT conference server.

All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034

Graham's e-mail address is:
vk5agr@amsat.org

Another interesting tracking program

There are many satellite tracking programs out there in WWW-land. Sometimes a new one comes to notice that's worthwhile recommending.

One such is ORBITRON. It is a nice simple yet effective graphic tracker written by Sebastian Stoff of Poland. A Google search will find it. It's quite user-friendly and comes with all the goodies one would expect without being too complicated or overwhelmingly "capable", like some.

ORBITRON can track many satellites simultaneously showing footprints and ground-tracks. Using a driver like WiSP DDE or Sebastian's own driver, ORBITRON can control your rotators to track one selected satellite and tune your radios to compensate for Doppler shift variations while a satellite pass is in progress.

It has an auto-update feature, requiring an open Internet connection, and will automatically down load and install the latest Keplerian elements for any group of satellites.

The graphic screen is attractive, functional and intuitive. I rather like ORBITRON and in my opinion it is one of the better ones of the current batch. It is offered free as "card-ware" and is definitely worth a look.

How much is volunteer labour worth?

A just completed review of work by AMSAT-NA Volunteers, indicated that during the year 2003, members have contributed over $236,000.00 of "In-Kind" service in the fields of Education Outreach and Spacecraft Development & Deployment. Impressive effort to say the least.

How are these figures calculated? We, the users often take the work of volunteers for granted. It was decided some time ago to recognise this work by documenting it in some meaningful way. Gunther Meisse W8GSM Treasurer of AMSAT-NA took on the task.

The above figure is the result of his determinations. Gunther is again requesting details from people who have contributed time to the development of the Amateur Radio Satellite Service. He asks them to contact him with details so he can make the calculations for 2004. He has listed the following categories:

Satellite Development/ Operations

- Satellite Design
- Satellite Construction
- Satellite Ground Control Operations
- Software development

Educational Outreach

- ARISS Design & Construction
- ARISS Ground operations (School Contacts)
- Journal Editing
- Journal Writing
- ANS Editing
- ANS Writing
- AMSAT Publications (Example: "ECHO Operation, Development & specifications")
- University Lecturing or mentoring
- University Satellite meetings (Micro & Cube etc)

I know of several VK amateurs who have contributed time and effort in one or more of these categories. If you are one who has spent volunteer hours in any of the above categories in the past and you have a good sense of the total hours you are spending in 2004, Gunther would love to hear from you in order to make the figures for 2004 as complete as possible. Contact <in-kind@amsat.org> for further information

John Kraus W8JK, pioneer researcher SK

It is fitting that a column devoted to amateur radio satellites should record the passing of this great scientist, inventor, writer, astronomer and radio amateur. He died at the age of 94 on July 18, 2004.

The name John Kraus and his call sign W8JK were household words in amateur radio circles when I started building amateur radio antennas in the late 1940s. His antennas were spoken about with great respect, even awe. Innumerable stations, both amateur and commercial used his designs.

John Kraus was a real "nuts and bolts" scientist. His antenna concepts were tried out in his own backyard or basement workshop and passed on to his graduate students at the Ohio State University to develop and refine.

His autobiographical book "Big Ear" is more than just the fascinating story of the leading radio astronomy installation of its age. It is a deep look into the mind of the man and the "crystal-set" beginnings of a life devoted to experiment and research. Along with several of his books, "Big Ear" has a treasured place on my bookshelf.

Although John Kraus's life as a scientist began long before the satellite age, the whole industry owes him a huge debt for his masterly research into concepts like circular polarisation and his invention and development of the helix antenna. When communication satellites became a reality in the 1960s, John Kraus's helix antennas were there, fully developed and documented, waiting to be used. They are still used to send signals back millions of kilometre through space from planetary and deep space scientific probes. AMSATers use them to communicate with amateur radio satellites on frequencies from 145 MHz to 2.4 GHz. It's hard to think of a more ubiquitous antenna.

John Kraus was even more widely known for his prolific contributions to Radio Astronomy. His book of that name is still the definitive text for science graduates entering a career in that field. John's opus magnum, simply named "Antennas" and its companion "Electromagnetics" have never been surpassed as definitive texts in their field. John Kraus W8JK, a life to be remembered.

VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR – vk2krr@telstra.com

Weak signal

David Smith - VK3HZ

Even in the depths of winter, there are still some interesting propagation conditions for the VHF/UHF weak signal operator.

On the evening of 13 July, Leigh VK2KRR encountered some unusual conditions from his QTH near The Rock. The Adelaide 2 m beacon was audible at S5 and the Mt Gambier 2 m beacon was peaking around S2. Contacts were had with Colin VK5DK (5/4) in Mt Gambier and Russell VK3ZQB (5/3) in Port Fairy. However, no stations could be raised in the Adelaide area. At about 11 pm, Leigh checked for the VK6 beacons and saw, on Spectran, a faint line on the frequency of the Esperance beacon (VK6REP - 144.568 MHz) – a distance of over 2300 km. At first, he thought it was probably a birdie. However, after monitoring the signal for a while, the 100 Hz FSK keying offset and timing confirmed unmistakeably that it was the beacon. The signal came and went over the next 4 hours, never quite becoming audible, and finally disappearing at 3 am. Leigh believes that an SSB contact may have been possible, and certainly a digital contact (JT44 or JT65) would have been easy.

Speaking of digital contacts, rumour has it that Joe K1JT is working on development of a new, weak-signal digital mode that will have substantially better performance. Tests have shown that it can decode signals that are around 7 dB weaker than JT65 can decode. With performance like that, EME contacts between two single-yagi stations would not be out of the question.

Rod VK2TWR reports that the VK2RSF beacon at Hudson Peak, south of Cooma on 144.414 MHz is back on air after a problem with the antenna. A huge dump from a one-in-twenty year snowfall, together with ice build-up on the top big wheel antenna caused a break in the feedline. It took several weeks before the beacon site became accessible again, for repairs to be carried out.

Graham VK3XDK has been busy constructing a portable 2 m EME setup. The antenna array consists of 4 10-element DL6WU-design yagis mounted on a large tripod. The array can be set up and dismantled by one person in a very short time, and is readily transportable in a normal vehicle. No results yet, but it looks very promising.

News from Christopher, VK2DO:

After thirty years operating from the Canberra region, Chris VK1DO has consolidated activity under his NSW callsign from Carwoola, just east of Canberra. This location has an ideal outlook and ought to be a great catalyst in working further afield on VHF/UHF.

This move has condensed his previous weekend location at Rossi, some 50 kilometres SE of Canberra and his home of 19 years backing the reserve in the southern suburb of Farrer. Chris is well known as a participant in the annual field day contest with brother Andrew, VK1DA and partner in crime, Geoff VK1CO

The new location has some thirty acres of space and initial indications suggest a crackerjack location for VHF/UHF and as well as a peaceful spot, the RF silence is much appreciated. With neighbours no closer than half a kilometre, a little uglification of the skyline is immaterial as is the radiation of a little ERP.

Since early April, progress on antennas has been slow. However, two long yagis are serving well on 2 m, 70 cm is awaiting new feeds, 23 cm is being re-assembled and apart from three Nally towers already in the ground and two more to come, Chris has been distracted working some 80 m grey line DX.

The outlook is very promising based on initial reports from Melbourne, Lakes Entrance, Bendigo, Kyabram etc. However, to again work a VK5 is anxiously awaited. Chris looks forward to reacquainting himself with the many stations in VK2, 3, 4 and 5 that he has worked over the years, with the advantage of a new location.

It is a great pity work gets so inconveniently in the way!

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Northern Corridor Radio Group
HAMFEST 2004

HAMFEST 2004 will be held on Sunday 7th of November 2004 at the Cyril Jackson Centre in Bassendean, Western Australia, the same venue as previous years.

Exhibitors and sellers will be admitted at 8am and the doors will open at 9am for general entry. It will finish at 1pm. The venue has ample parking and is close to public transport.

The kitchen will provide a range of snacks and drinks and a place to sit and enjoy these while you have an eyeball with new and old acquaintances.

The day raffle will offer a number of valuable prizes with a dual band VHF/UHF YAESU transceiver as first prize. There will also be a number of attractive door prizes on offer.

For further information:-
NCRG webpage – http://www.ncrg.org.au/
HAMFEST jackborthen@bigpond.com
PHONE Jack Borthen VK6KDX on (08) 9447 5933

Digital Modes

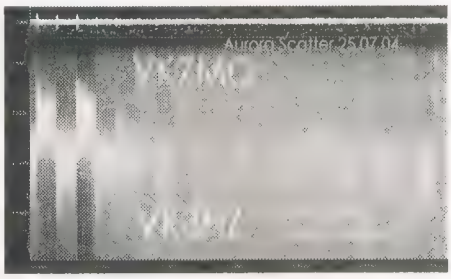
Rex Moncur – VK7MO

Compression of Signal Reports on WSJT: For the JT44 and JT65 modes WSJT provides a signal report in dB with reference to the noise in a 2.5 kHz bandwidth. The reports typically range from -15 to -30 dB. Operators will have noticed that these reports compress at high signal levels and even an S9 signal on your meter will give a report in the minus dB range. Tests have been conducted with a signal generator, which establish that JT44 and JT65 reports are accurate for signal levels lower than -12 dB but compress for stronger signals. In practical terms this is not a significant issue as JT44 and JT65 are normally used at signal levels of less than -12 dB. It is noted that Spectran has much better dynamic range and is linear from -30 dB to +20 dB when it also starts to compress. The problem with Spectran is that it does not have a reference level (such as the noise in 2.5 kHz bandwidth as used by WSJT) and thus must be calibrated against some other source.

FSK441A or FSK441B on 2 m: Operators during the weekend activity sessions have conducted extensive tests to establish whether FSK441A or B is the best mode for 2 m. These tests have shown that the B mode produces 10 to 20% more valid characters for short pings such at those that produce a single callsign. The typical range for the tests would be 1000 km. Theory predicts that at longer ranges the advantage would be even greater while at shorter ranges such as 500 km there may be little in it. For pings of longer duration the advantage of FSK441B is likely to be less but then in any case you would receive sufficient information on either mode. Operators are encouraged to conduct further comparative tests at longer (2000 km) and shorter (500 km) ranges, but in the meantime I suggest that FSK441B should be the standard mode in VK.

Auroral Event

There were periods of strong auroral activity on the evenings of 22, 25 and 27 July that produced signals as far North as VK2KRR near Wagga and VK2TWR at Nimmitabel. Stations heard making contacts were VK3BG, VK3HZ, VK3HY, VK3AFW, VK3AXH, VK3BRZ, VK3XLD, VK5DK, VK5ZK and VK7MO. During this period a number of stations conducted tests by measuring the Doppler shift using a known single tone signal generated by WSJT and watching the shift on Spectrogram or Spectran. The objective of the tests is to establish if we could relate the direction of the Doppler shift dependent to whether it is a morning or afternoon/evening Aurora. Each of the three periods of this event were afternoon/evening Aurora and for a large majority of the time produced positive shifts or 250 to 500 Hz. This compares with measurements undertaken by VK3UM on an event during the morning of 21 November 2003, which produced a negative shift of 400 to 500 Hz.



Some excellent results and spectrograms of Doppler shift were recorded by a number of stations. The Spectrogram screen shot below was captured by Leigh VK2KRR. It shows VK7MO and VK3HZ transmitting in alternate 30 second periods, both beaming south into the aurora. The auroral reflection can be seen as the lighter band above the signals. The direct signal from VK3HZ appears as a horizontal line on the display and multiple aircraft reflections can also be seen, producing Doppler shifted signals offset above and below the main signal.

More detailed summaries of the tests are recorded on Leigh, VK2KRR's, web site at: http://www.users.bigpond.com/anvdg/australian_aurora_scatter_studie.htm.

Please send any Digital Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

With weather conditions seemingly reverting back to a more normal situation, very few openings for southern FM DX operators occurred during July, as weather front after weather front moved from west to east across the southern part of Australia. Similarly, though without the southern type weather fronts, stations in north Queensland also found it was rather quiet, though picking up slightly at times.

Mike VK4MIK near Cairns has noted that the number of openings into the Townsville 2 m repeater has been up in July in comparison to previous months. Unfortunately the path has not extended further down the coast beyond Townsville. Mike has also had a few simplex contacts on 2 m with VK4FNQ in Charters Towers and VK4ABW in Townsville.

In the south, there was only one period of enhanced conditions during July. This was in the evening of the 13th and morning of 14th July, between areas of VK2, VK3 and VK5. Conditions were noted as being quite poor and had slow QSB, which made a QSO difficult as the path would constantly get too weak and drop out. From Victoria, I heard Bill VK3LY in Nhill making it to Adelaide's Crafers repeater for a short period. From here I was able to get to the higher repeaters, Lobethal at 747 km, Crafers at 764 km, Barossa Valley at 741 km and Murray Bridge at 733 km was also there. Things were not the best with QSB and weak signals.

That's as good as it gets for this month, slightly depressing. But, the poor conditions make you all the more appreciative of those amazing enhanced openings. Just think, if the band was always open, it would end up being quite boring.

Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at vk2krr@telstra.com.

Know your secondhand equipment

Ron Fisher VK3OM.

FT-7

A change of stable this month with a look at two popular Yaesu rigs often found on the second-hand market. But before launching into them, an observation. It's great to hear so many of the new call signs on the HF bands, many of them using older transceivers. Doing a casual poll over a few nights listening on 80 metre I would say that the TS-520 and TS-520S are by far the most popular. I would guess that many of these have been sitting unused for years. Perhaps "someone" might think about starting up a TS520 net, or perhaps an FT-101 net. It's just a thought, but what fun it would be to swap ideas on using these wonderful old rigs.

But for now lets look at a couple of older Yaesu transceivers, firstly the FT-7.

The FT-7 arrived on the Australian market late 1977 at a price of about $580. However, over the next year or so this had dropped to around $375. About this time there was quite a price war on between the many amateur radio equipment distributors that existed in those days.

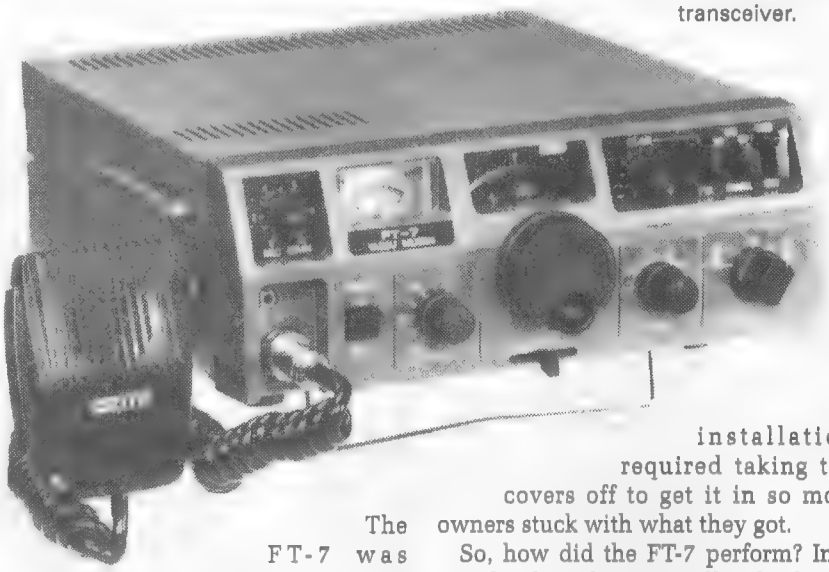


Photo 1 –Yaesu FT-7 transceiver.

The FT-7 was (and still is) one of the first fully solid state transceivers. It sold alongside the TS-120V. Both had about the same power output, 10 to 15 watt with the FT-7 having just a touch more power than the TS-120V. The FT-7 covered 80 through to 10 metre but this was before the WARC bands. Coverage of 10 metre was limited to one 500 kHz segment. Optional crystals to cover more of the band were available but installation required taking the covers off to get it in so most owners stuck with what they got.

So, how did the FT-7 perform? In a couple of words, very well indeed. The receiver was probably the hottest thing around at the time. It sounded good most of the time but did suffer a slight bit of front end overload on very strong signals. A popular modification was to wire in a switchable 10 dB attenuator and this was actually incorporated in the later FT-7B, but more about this transceiver in the future article.

Unlike some its contemporaries, the

Silent Key

Fred Millington VK2ZFF

This morning, Sunday August 8th, 2004, while I was listening to the WIA Sunday morning Broadcast, I received a phone call to tell me that Fred Millington VK2ZFF, better known as "VK2 Zany Fluffy Flakes" had passed away.

Fred was a member of the St George Amateur Radio Club for many years, when he lived in Ramsgate. During his working life, he worked for a number of companies, the last one being Vane in Allawah. Many hams may still have equipment in their shacks that was built by Fred to check and/or condition car or truck batteries.

In addition to his hobby of electronics, Fred was an amateur student of Egyptology and was held in high regard in academic circles because of his very extensive knowledge.

Fred and his second wife Brenda, made a number of trips up the river Nile, visited many pyramids and other Pharoah burial sites in Egypt. Whenever you walked into his unit in Ramsgate, you were greeted by someone like Nefertiti or Nefertari. Sometimes a bit unnerving!

Fred had suffered a number of strokes in his earlier years, but he never gave up. It might have slowed him down a bit, but he was a fighter from way back.

Fred had a terrific sense of humour. Some people call it "dry" humour. "Here we are in the Sahara desert, we have roughly one hundred thousand dollars in this suitcase, but we can't buy a drink anywhere."

From Ramsgate, Fred and BBBB, his second wife, better known as "Big Busty Buxom Blonde", relocated to a small place called Oak Flats.

Fred joined the Illawarra Amateur Radio Society and got back on the air. A big storm blew down the tree in his backyard, wrecked his aerials and a few other things, but even that did not stop Fred. With help from a few mates, he was back on the air within a few weeks. From Barton Street in Oak Flats, Fred operated virtually till his dying days.

One day Fred, we'll catch up with you, on that big transmitter in the sky. Have a good rest my friend, till we meet again.

Hank VK2BigHairyLegs

Hank Laauw VK2BHL, e-mail h_laauw@yahoo.com

FT-7 did not sport a digital frequency read-out, but the analogue dial was very smooth and accurate to one kHz. One small problem was that the dial was hard to read in direct sun light.

The analogue VFO was very stable for the time with drift seldom exceeding a couple of hundred Hz from a cold start.

The transmitted signal on SSB was above average with excellent quality from the supplied 500 ohm dynamic microphone. CW operation was also well catered for with semi break-in operation and sidetone. A 100 kHz calibrator is also included.

These days, the FT-7 is almost a collector's item with mint condition examples selling very quickly. So what are they worth. With most of them around 25 years old, the condition varies from terrible to excellent. However these transceivers can take a beating and still perform well. At the bottom end you might find one for around $125 and then up to $225 for a pristine unit. All should come with the matching Yaesu 500-ohm microphone, a mobile mounting bracket, an original instruction book and a DC power lead. I have a FT-7 in my collection, which I have connected to a small deep cycle battery for use when the AC power goes off. This is one of the joys of living in the country.

To the best of my knowledge, Yaesu made no optional accessories specifically for the FT-7. You will need a suitable regulated power supply with 13.8 volt output capable of supplying about 2.5 to 3 amp and these are often available at hamfests for around $20 or so.

FT-707

Another Yaesu that seems to go on forever. The FT-707 arrived on the Australian market in early 1980 priced at around $750. It was closely related to the larger FT-107, which preceded its arrival here, by a couple of months. The main difference was that the 107 had a built in AC power supply where the 707 was designed as a compact mobile/portable transceiver which was also ideal for home station use with the optional FP707 external power supply.

So, what has the FT-707 got to offer? Firstly it covered all amateur bands from 80 to 10 metre, including the new WARC bands of 30, 17 and 12 metre plus full coverage of the 10 metre band. It was capable of producing a full 100 watt output on both SSB and CW. There was also the facility to transmit AM probably with around 20 to 25 watt output. However, as there was no AM filter available for the receiver this mode was probably not used very much by FT-707 owners.

In addition to an excellent analogue dial, a bright six digit display with readout to 100 Hz is built in. However, by now it is probably not reading the correct frequency. This is easily put right. Follow the instructions on page 37 of your manually, BUT BEWARE; make sure the calibrator is on the right frequency first by checking it against WWV on 10 MHz

So, how does the 707 perform on air. Actually, quite well. The receiver is very sensitive. Selectivity is good and the "width" control is excellent for removing nearby interference. The only criticism is the drifty VFO. It seems to take a long time to settle down and even then it never really completely stabilises. If you can live with this, and it seems that many can, you will have a useful and reliable transceiver.

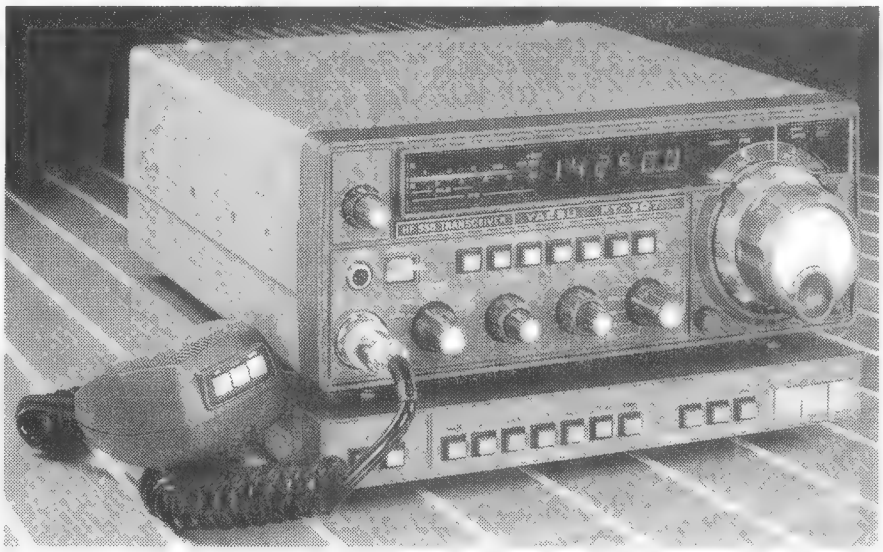


Photo 2 – Yaesu FT-707 transceiver.

Transmit audio on SSB sounds very clean with well balanced response. CW is likewise good and if you are lucky enough to have the optional narrow filter fitted you should be happy.

Perhaps the most controversial feature on the 707 was the metering. It consisted of a line of coloured LEDs. While it looked pretty it lacked accuracy. Many owners liked it, many didn't. Interesting to note that Yaesu never used this metering system again on an HF transceiver.

Yaesu produced a number of excellent accessories to match up with the 707. These included an external digital VFO, the FV-707DM, which had up/down scanning and 12 memories. These are quite rare on the second-hand market.

The FP-707 power supply is often seen advertised and is very popular. It has a current output of 20 amp at 50% duty cycle. It has a built-in speaker and makes a nice matching unit for almost any transceiver.

The FC-707 ATU also turns up regularly on the second-hand market. It covers all bands from 80 to 10 metre, and has a power/SWR meter calibrated to 150 watt. It is a nice looking unit but has a limited matching range of 10 to 250 ohm

So, what are all of these worth. The FT-707 sells in a range of $175 to about $300. The FP-707 around $130 and the FC-707 around $100.

Next time I intend to look at two other Yaesu HF transceivers, the FT-7B and the rather rare FT-77.

In the meantime, good hunting on the second hand market.

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

September 2004
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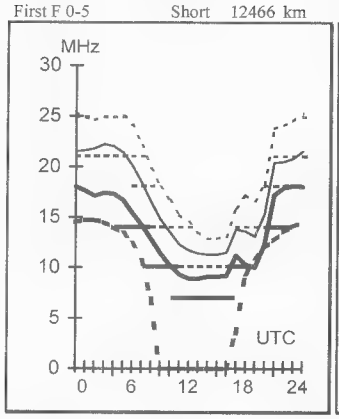
Legend

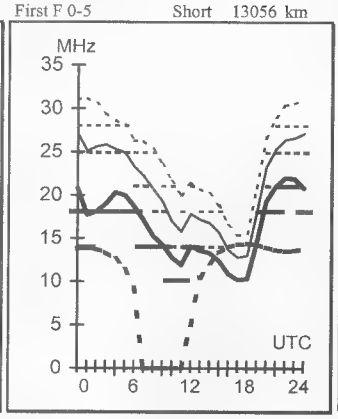
Frequency scale: UD, E-MUF, OWF, F-MUF, ALF, >10%, >50%, >90%

Time Scale

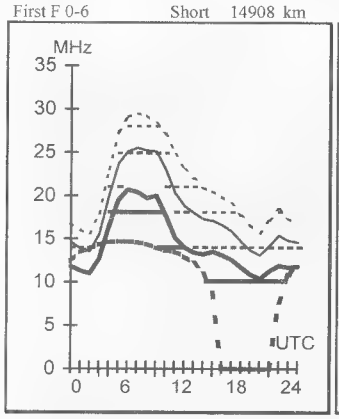
Adelaide-Anchorage 30
First F 0-5 Short 12466 km



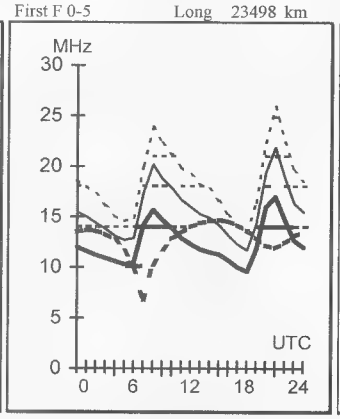
Brisbane-Lima 122
First F 0-5 Short 13056 km



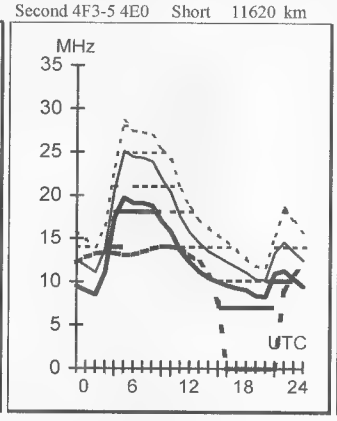
Adelaide-Budapest 305
First F 0-6 Short 14908 km



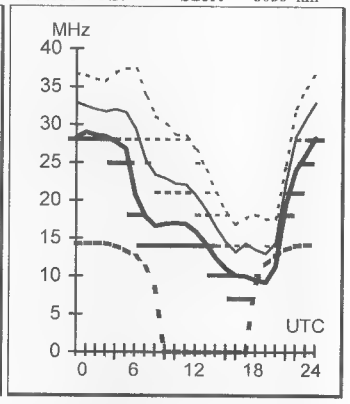
Brisbane-London 147
First F 0-5 Long 23498 km



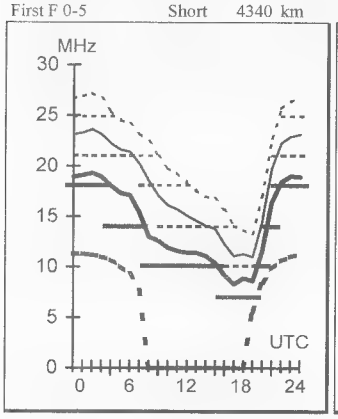
Canberra-Lusaka 239
Second 4F3-5 4E0 Short 11620 km



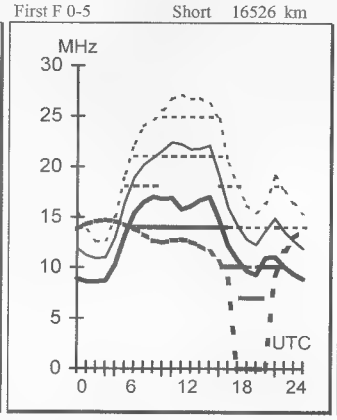
Darwin-Honolulu 65
First 3F3-7 3E0 Short 8635 km



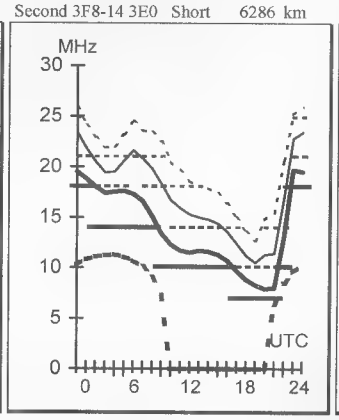
Adelaide-Suva 75
First F 0-5 Short 4340 km



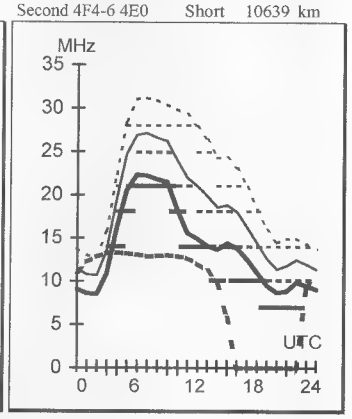
Brisbane-London 327
First F 0-5 Short 16526 km



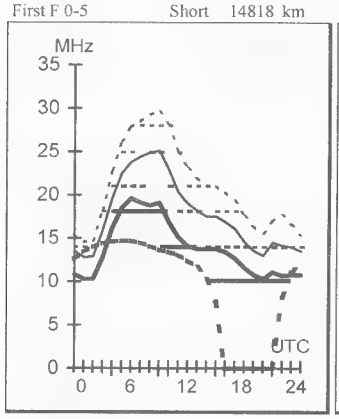
Canberra-Manila 327
Second 3F8-14 3E0 Short 6286 km



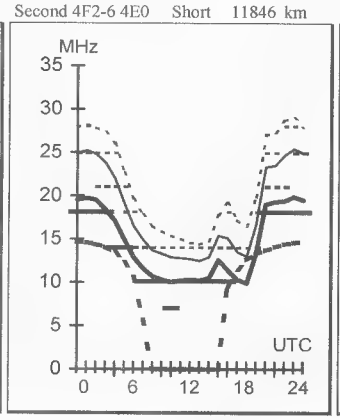
Darwin-Johannesburg 241
Second 4F4-6 4E0 Short 10639 km



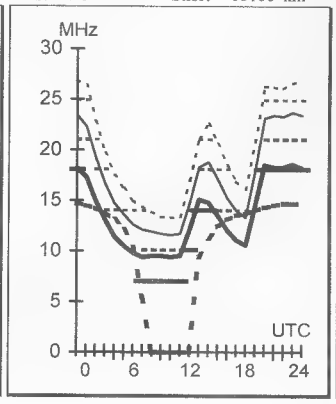
Adelaide-Warsaw 312
First F 0-5 Short 14818 km



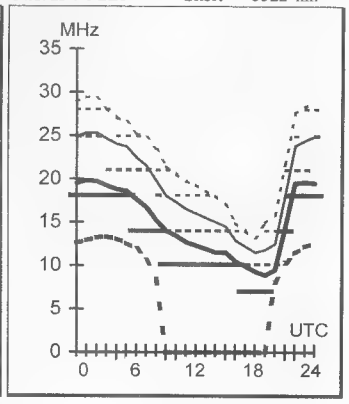
Brisbane-Seattle 44
Second 4F2-6 4E0 Short 11846 km



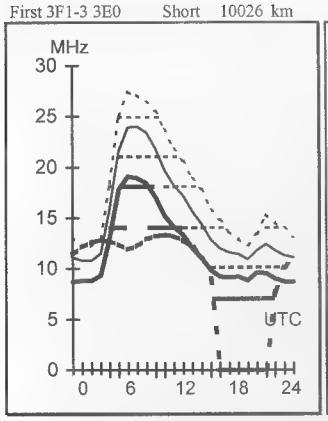
Canberra-Ottawa 59
First F 0-5 Short 16100 km



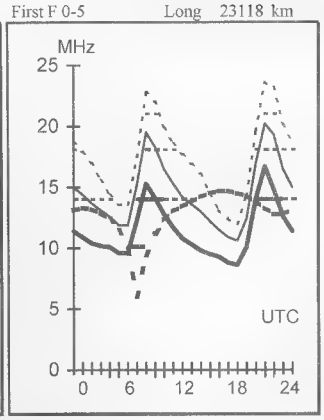
Darwin-Wellington 135
First 2F4-6 2E0 Short 5322 km



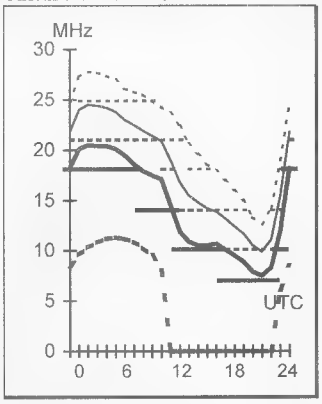
Hobart-Capetown 220
First 3F1-3 3E0 Short 10026 km



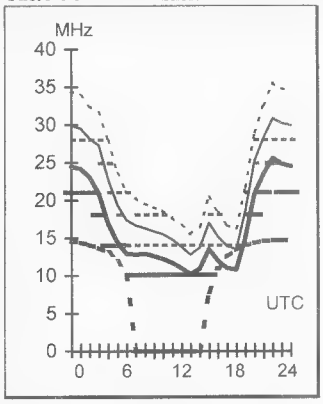
Melbourne-London 131
First F 0-5 Long 23118 km



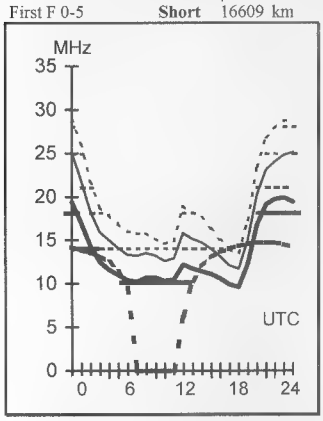
Perth-Kuala Lumpar 336
First 2F8-13 2E0 Short 4179 km



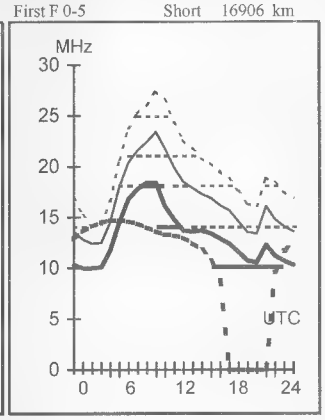
Sydney-Los Angeles 61
First F 0-5 Short 12075 km



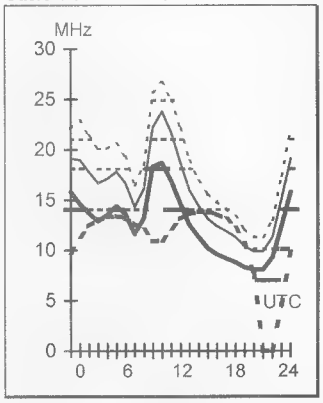
Hobart-New York 80
First F 0-5 **Short** 16609 km



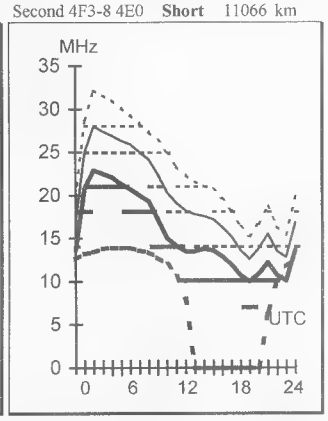
Melbourne-London 311
First F 0-5 Short 16906 km



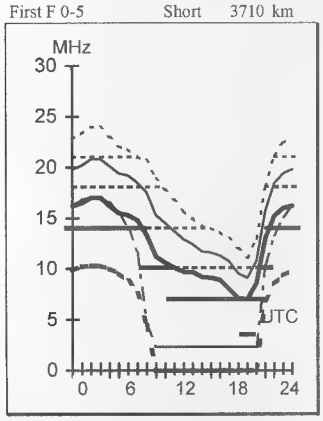
Perth-Rio de Janeiro 203
First F 0-5 Short 13523 km



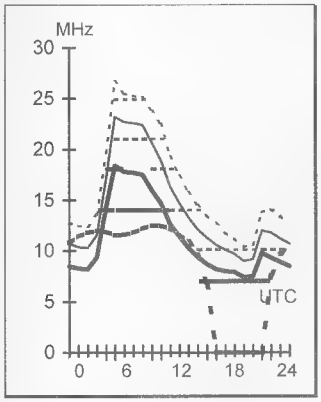
Sydney-Rawalpindi 304
Second 4F3-8 4E0 **Short** 11066 km



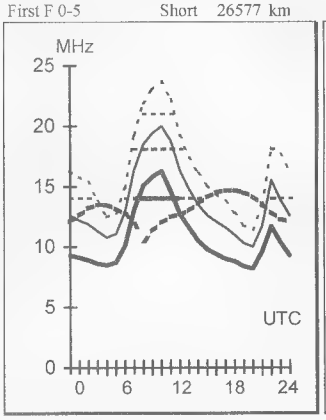
Hobart-Port Moresby 360
First F 0-5 Short 3710 km



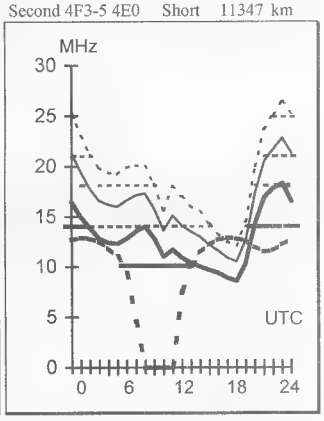
Melbourne-Pretoria 234
Second 4F5-7 4E0 Short 10353 km



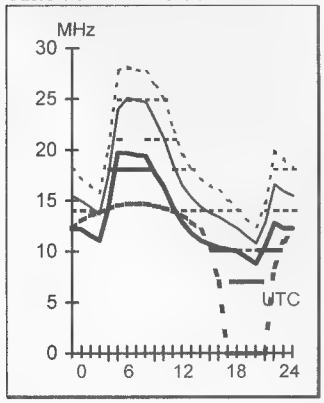
Perth-Stockholm 144
First F 0-5 Short 26577 km



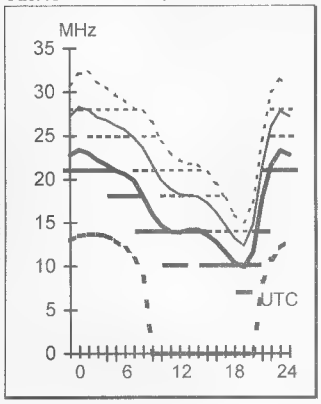
Sydney-Santiago 145
Second 4F3-5 4E0 Short 11347 km



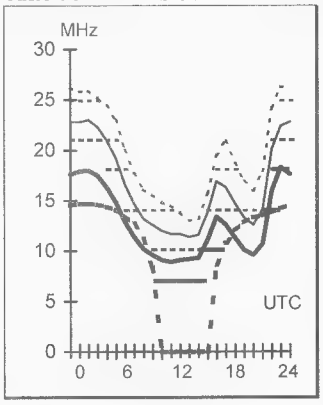
Hobart-Rome 284
First F 0-5 Short 16350 km



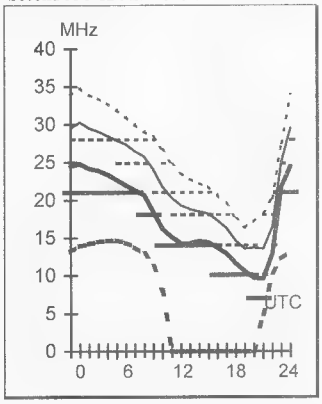
Melbourne-Tokyo 356
First 3F4-7 3E0 Short 8191 km



Perth-Vancouver 50
First F 0-5 Short 14823 km



Sydney-Singapore [illegible]
Second 3F8-12 3E9 Short 6296 km



Hamads *classifieds* FREE

FOR SALE NSW

Eight long fibreglass poles from 20 metre quad, and spider brackets to mount same. **Galvanized tower**, 20 metre to boom level, with rotator. Dismantles into trailer-length sections. Make an offer, either or both. Also, free to a good home, back copies of AR from 1960s to 2004. Roger Graham, (used to be) VK2AIV. Phone 02 4234 1431 or email rogergraham@optusnet.com.au.

Yaesu G-5400 B AZ/EL ant controller c/w long cables $900. **SatTrak 3** satellite tracker for 12 satellites $215. **Tiny 2 TNC** 1200/9600 switchable controller c/w all cables $200. **ICOM 471A 70cm** xcvr incl UX14 converter & mike (small problem with preamp voltage) $375. **G3RUH 400 baud MK2** PSK decoder $150. 60cm aluminium dish c/w SSB (Germany) **2.4 GHz converter** $525. **Mode J 144 MHz SSB (Germany) filter**, new $95. Handbooks/circuits etc for all units. If items 1 & 2 are bought together deduct $50. All ONO. Art VK2AS Phone 02 9416 7784

FOR SALE VIC

Antennas. Triband HB-35c, as new $525, **Duoband** 20/15 3 ele $150, **10m** 4 ele $100, **40m Cushcraft** D40 dipole $150, **2m** cross Yagi 10 ele $50. David Phone 0438 393 550.

HF-TET Emtron HB-35c antenna full size triband 10-15-20 m. All in stainless $200. If you think it's too dear, price a new one. Jack VK3AAC, Phone 03 5127 3905, email vk3aac@amsat.org.

HF-log periodic antenna. ATN 13-30 MHz, All in stainless, 6 elements-6 m boom. $200. If you think it's too dear, price a new one. Jack VK3AAC, Phone 03 5127 3905, email vk3aac@amsat.org.

Tower, self supporting, 18 m high, 1.2m base. 160 kph design, fully hot dip galvanised, all comps and drawings for permit, hinged at about 12 m, best offer over $500. Keith VK3AFI, Phone 03 5281 2264, QTHR

WANTED VIC

R-1155, CR-100, B-40D, FT7-B, FT-707. Audio amp for TK60, AR88HF, BC348 notes, BC342 notes, Hammarlund HQ-120X, field intensity meter type WX-A, serial no 539 made by Rea USA. Jackson, 38 Mooltan Street, Flemington Vic 3031.

WANTED SA

Icom IC-490A - all mode 70 cm transceiver, working or not. Phone (08) 8346 7042 QTHR Mervyn VK5MX

Malcolm Haskard VK5BA is looking for detailed picture/s or the loan of a model R-1484 microphone as used with the AWA Teleradio Model 3-B which was used by the CoastWatchers in WW2. He wants to modify a handset he has to match the original. email mhaskard@chariot.net.au

Will Fred Fax 93723076, which does not work, who wanted a JR-60. Please send me Full Name, call sign and a contact number that works

TRADE ADS

VK DISCOUNT CABLES

I am currently having specials on the following coax cables. As follows -

Heliax LDF-450 @ $4.85 Per metre

Heliax LDF-550 @ $8.00 Per metre

LMR 400 (Belden 9913) @ $390 per 100m qty ($3.90 P/m)

RG-58CU @ $66 per 100m

RG-213 @ $166 per 100m

LDF-450 male & female N type connectors @ $40 Ea

BEL 9913 N type connectors @ $11 ea

Technical data available on request.

Cable samples available on request.

Freight anywhere in VK $18.50

For any further inquiries on these cables, or any other cables you may require, please don't hesitate to contact me, as we are able to supply anything you can think of!

Regards Rob Long VK2XZ

rob_vk2xz@hotmail.com

About hamads....

- Hamads may be submitted by **email** or on the **form on the reverse of your current Amateur Radio address flysheet**. Please print carefully and clearly, use upper AND lower case.
- Separate forms for For Sale and Wanted items. Please include name, address STD telephone number and WIA membership number if you do not use the flysheet.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from those who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
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Email: *newunltd@bigpond.net.au* **Fax:** *03 9756 7031*

Postal: *Newsletters Unlimited, PO Box 431, Monbulk Vic 3793*

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MISCELLANEOUS

• **The WIA QSL Collection (now Federal) requires QSLs.** All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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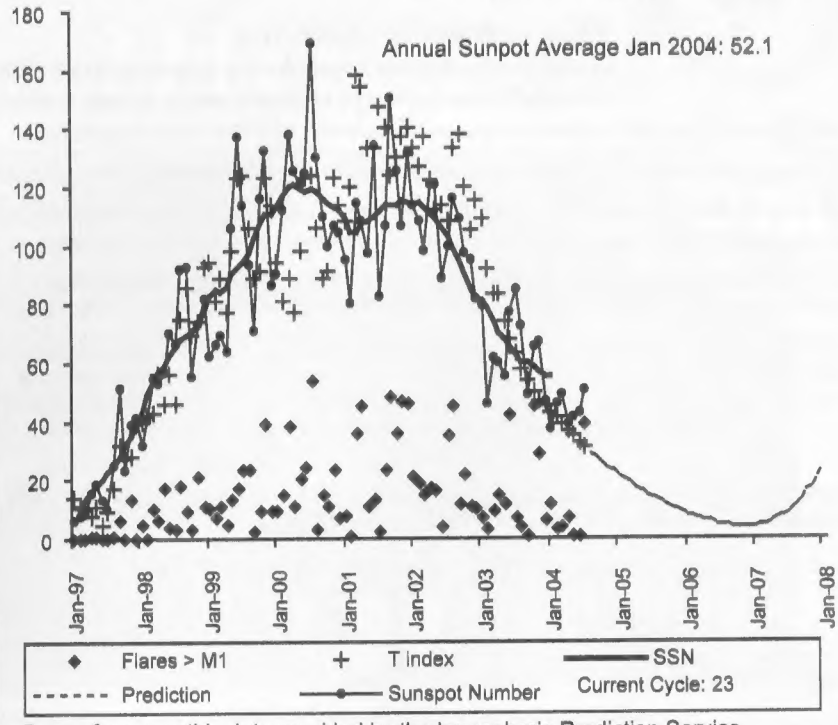
Sunspot Numbers

Monthy Sunspot Average July 2004: 51.0

Annual Sunpot Average Jan 2004: 52.1



Drawn from monthly data provided by the Ionospheric Prediction Service

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Directory

The Amateur Service:

a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest. 1.56 ITU Radio Regulations.

The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.

WIA membership fees are: **★ $ 75 for full members (F grade), ★ $ 70 for pensioners and students (G and S grade), and ★ $ 50 for membership without 'Amateur Radio' (X grade).** ***Payment direct to National office.***

National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org, www.wia.org	Subject to change see www.wia.org, follow national news prompts. Contact nationalnews@wia.org.au, National VK1WIA news is distributed to all states.

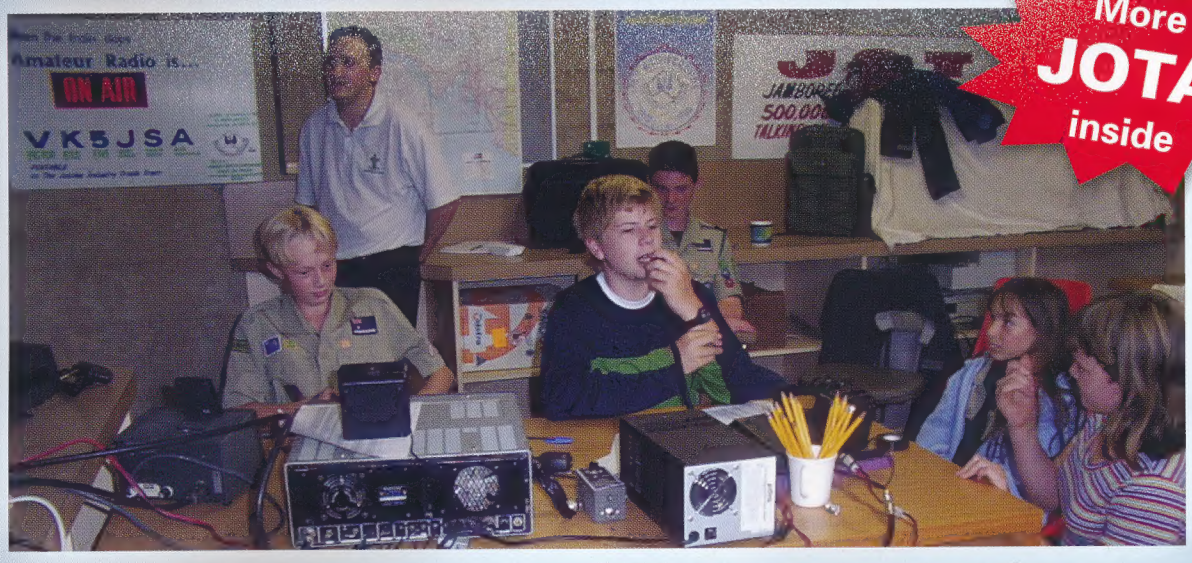
Advisory Committees	Contact	News Bulletin Schedule
VK1 Australian Capital Territory	secretary@vk1.wia.ampr.org	Sundays at 11.00 am VK1WIA 7.128, 146.950,438.050 Tuesday at 8.0pm 146.750, 147.375, 438.025
VK1WX Alan Hawse VK1ZPL Phil Longworth VK1ET John Woolner		
VK2 To be advised		
VK3 Victoria	Phone 03 9885 9261 advisory@wiavic.org.au	VK1WIA Sunday 11.0am via HF and major VHF / UHF rptrs
VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill		
VK4 Queensland	Phone 07 3221 9377 qac@wia.org.au	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK4ERM Ewan McLeod VK4ZZ Gavin Reibelt VK4KF Ken Fuller	ewan.mcleod@bigpond.com	
VK5 South Australia and Northern Territory	Phone 08 8294 2992	VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
VK5NB Jim McLachlan VK5APR Peter Reichelt VK5ATQ Trevor Quick	jimac@picknowl.com.au peter.reichelt@bigpond.com vk5atq@chariot.net.au	
VK6 Western Australia	Phone 08 9351 8873 vk6council@iinet.net.au	VK1WIA Sunday 9.0am via WIA network
VK6NE Neil Penfold VK6XV Roy Watkins VK6KZ Wally Howse	vk6ne@upnaway.com vk6xv@bigpond.net.au vk6kz@bigpond.com	
VK7 Tasmania	Phone 03 6234 3553	VK1WIA via Tony, VK7AX 8.55am
VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	

Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

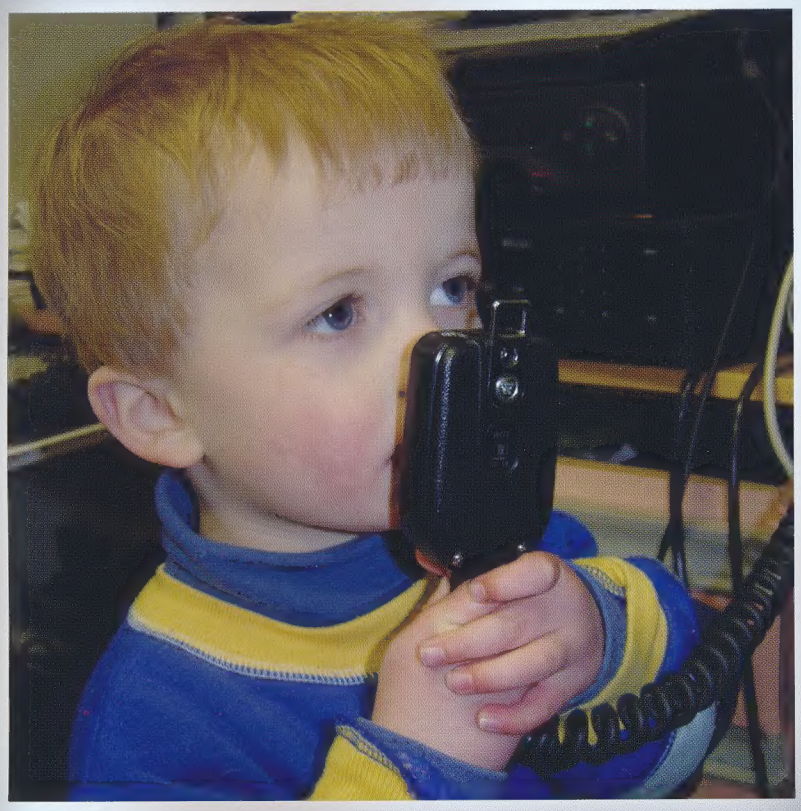
A new generation discovers *the magic!*

More JOTA inside



South Australian Scouts discover some fascinating aspects of amateur radio

Can amateur radio appeal to this computer-savvy, mobile phone-totin' generation? These pictures say it can.



JOTA opens up possibilities for young scouts and guides to take an interest in amateur radio and become potential future members of amateur radio clubs.

Lea Adcock

"I was working away on the bench in the shack and heard my 2.5 year old son, Reuben, chatting away and turned to find him imitating his OM! This harmonic is destined to become a Ham, bring on the foundation licence".

Justin, VK7TW.

JOTA
October 16 & 17

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